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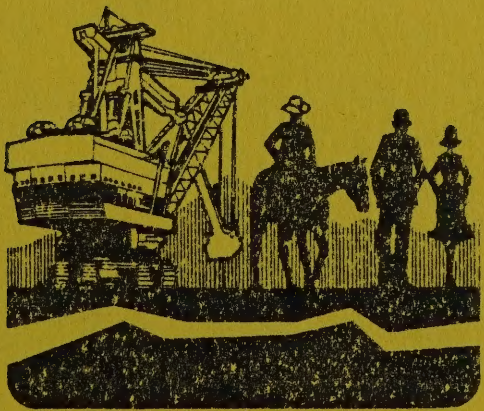

BLM
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BLM SOCIAL EFFECTS PROJECT
ABRIDGED LITERATURE REVIEW

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Prepared for:
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Prepared by:
Mountain West Research, Inc.
In association with Wyoming Research Corporation

December 1980

MOUNTAIN WEST
RESEARCH INCORPORATED

December 18, 1980

Mr. Paul Myers
COAR
Bureau of Land Management (D-400)
Denver Federal Center, Bldg. 50
Denver, CO 80225

Dear Paul:

Mountain West Research, Inc. is pleased to submit the original and three copies of the Final Compilation Report. This report is comprised of two volumes:

Literature Review
Abridged Literature Review

Together these volumes contain a comprehensive bibliography, an extensive annotated bibliography, and a synthesis of the literature, by major section.

If you and Julia have any questions as you review the report, please contact me, Kristi Branch, or Jim Thompson. Any questions regarding the printing should be addressed to Marie Tomasik.

Sincerely,

MOUNTAIN WEST RESEARCH, INC.

James R. Moore

James R. Moore
Project Director

JRM/jz
enc

cc: Branch, Thompson, Guida, Jordan

512 NORTH 29TH STREET, BILLINGS, MONTANA 59101, (406) 259-8982
ALSO LOCATED AT 1414 WEST BROADWAY, SUITE 228, TEMPE, ARIZONA 85282, (602) 968-7991

Co-Principal Investigators

Kristi Branch
James Thompson

Principal Authors

Social Organization:	Ken Wilkinson
Political Organization:	Allan Schnaiberg
Economic Organization:	James Thompson
Population and Demography:	Steve Murdock
Family:	Eldon Schriner
Attitudes, Values and Quality of Life:	Kristi Branch Pat Jobes Gene Summers
Native Americans, Women and Other Specific Groups:	Stan Albrecht Matthew Snipp
Mitigation:	Sharon Kelsey

BLM SOCIAL EFFECTS PROJECT

BLM Project Coordinators

Paul Myers
Tony Guida
Julia Jordan

Project Director

James R. Moore, Mountain West Research, Inc.

Project Co-Managers

Kristi Branch, Mountain West Research, Inc.
James R. Thompson, Wyoming Research Corporation

Project Team

Stan Albrecht, Brigham Young University
Pamela Bergmann, Mountain West Research, Inc.
James Creighton, Creighton and Creighton
Cynthia Flynn, Social Impact Research, Inc.
Pat Jobes, Montana State University
Bob Kimble, Wyoming Research Corporation
Steve Murdock, Texas A & M University
David Pijawka, Mountain West Research, Inc.
Allan Schnaiberg, Northwestern University
Matt Snipp, Summers Associates
Gene Summers, Summers Associates
Ken Wilkinson, Penn State University

Technical Editing

Marie Tomasik, Manager
Sandy Grubb
Marion Cherne

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1. INTRODUCTION

1.1 Overview

This review and synthesis of social science literature related to the social effects of coal development was essential to the objectives of the BLM Social Effects Project for two reasons. First, a broad, thorough review and synthesis of such literature was required to apply the considerable body of available social science knowledge to the identification of important social changes that could occur with massive coal development in the West and to the formulation of an approach that could forecast the nature and magnitude of such changes under various conditions of energy development. Second, despite the number of social impact analyses (SIA's) which have been commissioned in the West, a literature review and synthesis of this type has not previously been completed.

A comprehensive literature review on any subject area in the social sciences is a considerable undertaking. To be of much use, a literature review must be more than an annotated bibliography. And to be of practical service, it must be developed to the point of becoming a research tool. Accomplishing this requires a mandate, a clear understanding of the goals of the project, and sufficient resources and time to acquire the necessary materials. It also requires qualified and thoughtful people to review and synthesize the significant works related to the subject area. The people involved in this effort need to be experienced in the area they are studying so that they can understand and synthesize what they have read, thus ensuring a creative, productive result. The BLM Social Effects Project was most fortunate to be given adequate time, resources, and authorization to be able to apply the level of effort and expertise needed for this task.

The scope of the literature review for this project was determined by recognition that social change is a subject so complex that there is little hope of achieving much understanding of the social effects of coal development unless they can be related to the massive amount of social research and theoretical development conducted in the past few decades. Contrasting social changes due to coal development to those identified in national and cross-cultural studies of social change reveals whether changes accompanying coal development are unique or similar to those occurring in other contexts of time and place. If the changes from energy development in the West are unique, then primary research is required in order to understand them. But if they are similar to changes occurring elsewhere, a great deal can be learned without incurring the cost and time delay required for primary research. It is the belief of this project team that many of the changes accompanying coal development are not unique, and that considerable progress in the western SIA work can be achieved by better utilization of existing research and theory.

1.2 Conceptual Framework and Review Process

As stated in the response to the request for proposal for this project, a major premise of this effort is that SIA's in the West have often suffered from a unidimensionality of perspective and method. In the West, in particular, too little effort has been devoted to the basic dimensions of social organization. Thus, a triangulated research design is being used to organize all phases of the study. For the literature review, this meant that a conceptual approach was needed which would encompass all or most social structures and processes operating in rural western communities. Selecting this approach was not easy. Consideration was given to the use of various theoretical approaches such as political economy, human ecology, general community theories, neo-colonialism, or theories of rural development. It was eventually decided that any specific theoretical approach was too limiting to provide an adequate framework for the literature review. Rather, it was decided that an effective means for organizing the literature review effort was to recognize: (1) that a central concern of sociology is social organization, and that an effort was needed to bring this concept into better focus as an organizing principle, and (2) that a central concern of policy makers and others involved with or affected by energy development is the maintenance or enhancement of quality of life presently existing in the communities in the region.

Disregarding problems of definition of community or implications of various theories of community, the focus of attention on the small western town, ranging in size from a few hundred to 100,000 people, was used to delineate areas of the literature in need of review. This perspective accomplished two things. First, it restricted the literature search to social behaviors, processes, and structures which occur in western towns in semiarid or arid agricultural regions of the United States, thus limiting the type and therefore the number of applicable studies and the types of social behaviors of particular concern. Second, the overriding concepts -- social organization and maintenance or enhancement of quality of social life -- provided a basis for deciding which social variables were of greater or lesser importance (given the geographic area) the type of analysis requested, and the purpose of the project.

The following eight major subject areas organize the review:

- -- Social Organization
- -- Political Organization
- -- Economic Organization
- -- Population and Demography
- -- Family
- -- Attitudes, Values, and Quality of Life
- -- Native Americans, Women and Other Specific Groups
- -- Mitigation

Specific questions in each area were formulated to stimulate thought and further focus the literature search, and an initial bibliography was prepared identifying the available literature. From this bibliography, those articles which appeared most pertinent were identified for review. Based on these reviews, a preliminary draft was prepared for submission to BLM and for circulation to team members. A supplemental review was conducted to pursue promising material and to address topics which had been identified as priorities during the Social Effects Conference in October. The bibliography was updated and the synopsis for each topic area was prepared.

1.3 Structure of the Report

The Draft Final Literature Review has been prepared in an unabridged and an abridged form. The body of the report is composed of the synopses, the reviews, and the bibliography. Because of the volume of reviews prepared, only selected reviews have been included in the abridged version -- otherwise, the materials in the two documents are identical.

A synopsis was prepared for each of the eight topic areas. The purpose of the synopsis was to synthesize the results of the literature review for each area into an analysis of the pertinent theories, analytic frameworks, and major research findings and to identify the critical research questions that emerge from that analysis. The synopses are presented in the order listed above.

The reviews of the literature included in the report were prepared to provide a summary of method and major findings, an indication of the nature and appropriateness of the theoretical framework and analytic technique, the type and availability of data, and a comment concerning the pertinence of the article to the project. In the unabridged version, the reviews are included in a separate section, organized alphabetically by author and keyed (in the upper right-hand corner) to areas.

In the abridged version, selected reviews follow the synopsis to which they pertain.

The bibliography is organized alphabetically by author. It is included in both the unabridged and abridged versions of the report.

This report is submitted as a final draft. However, it is expected that additional material will be published or identified during the course of the project that warrant inclusion in the final report, and that additional refinement and expansion of the synopses may be desirable as the project progresses. Because the focus during this phase of the project was on the development of an appropriate theoretical framework and prioritization of research questions, areas less directly pertinent to this focus have not received the attention they deserve. In particular, material dealing specifically with methodology -- including existing guides to social assessment and environmental impact statements as well as technical sociological research methods -- have generally not been included in this review. They will be addressed during the next phase of the project.

Similarly, because the purpose of this literature review was principally one of research rather than review, many of the "classic" and basic works that would be of use to social scientists conducting impact assessments have not been included. Such material will be incorporated into the Guide prepared by this project, either as a separate accompanying document, or as an integral part of the Guide itself.

2. SOCIAL ORGANIZATION

2.1 Introduction

In the course of the Literature Review, the concept of social organization, presented in this synopsis, has emerged as an organizing principle for the analysis of the social effects of energy development in the West. Of great appeal in this concept is its ability to provide a coherent, social focus to the interpretation of change in the various elements of the community.

Two bodies of literature on social organization have been examined. One consists of reports of research on the effects of rapid growth on the social organization of small western communities which have experienced energy development. The other consists of studies of a more general nature and aspects of social organization which may be affected by energy development. An evaluative summary of the former of these is provided in this paper. The second body of literature is then used, in conjunction with the conclusions of the evaluative summary, to indicate dimensions and problems of local social organization which need to be considered in the BLM Social Effects Project. The term "social organization" is used in many ways by social scientists, but it usually refers to the institutions, organizations, and related processes through which people order their relationships. This general concept was used to organize the discussion here. A more precise definiton follows the evaluative summary.

2.2 Studies of Social Organization in Energy-Growth Communities

Dozens of papers, many of them unpublished, have described and interpreted the effects of energy development on various aspects of social organization of small western communities. With few exceptions, the theses of these papers are based on the following assumptions:

1) The affected communities have a traditional form of social organization based on rurality (smallness and relative isolation from urban influence), close personal relationships, informal patterns of social control, homogeneity, and integration through strong family and church commitments.

2) Energy development alters the economic base of the community, causes a large, rapid increase in community population, confronts local residents with lifestyles and values which are foreign to their experience, and greatly increases the influence of extra-locally based urban institutions and organizations in community affairs.

3) These changes cause: (1) a transformation from rural to urban social organization, and (2) disruptions in social life due to the speed with which the community must adapt to this transformation and to the increased scale -- numbers of people, activities, organizations -- of social life associated with the transformation.

4) This transformation and the attendant disruptions cause an increase in rates of crime, suicide, divorce, welfare dependency, altercations among friends, juvenile delinquency, and mental breakdown because of greatly increased stress.

These reports are seriously flawed from a scientific perspective in the following ways:

1) They are based on very little "hard evidence." Two early papers (1974, 1976) have been widely cited by others as sources of primary documentation of these assumptions. These papers contain no data other than casual observations -- indeed, they speculate why the effects must be as assumed.

2) Evidence presented in the few studies which have examined empirical trends has often been misinterpreted and exaggerated. Several papers have presented data on trends in crime, welfare payments, caseloads of social agencies, mental hospital admissions, etc., which show increases in prevalence, but little if any change in incidence or rates of disruption, as if they demonstrated drastic change social processes -- a misinterpretation and misrepresentation resulting from failure to clearly consider and control the increase in population that has occurred.

Other papers have presented enormous percentage increases in prevalence of some disruptions without: (1) providing accompanying data on the numbers upon which the percentages are based, (2) noting that these large percentage changes are artifacts of very small initial numbers and populaton bases, or (3) cautioning that additional exaggeration due to changes in recording practices and double-counting (by various agencies which deal with a single problem such as child abuse or alcoholism) has probably occurred. No studies supporting the assumptions listed above have used multi-variate (i.e., controlled) methods of analysis.

3) The assumption that urbanism per se causes increased social stress is not supported by the findings of sociological research over the past few decades.

4) The assumption that the rural western communities contain an essentially rural -- gemeinschaft -- form of social organization to energy development is contradicted by historical evidence communities in the region have had extensive extra-local ties and have undergone repeated changes throughout their history.

5) The assumption that rapid growth induces unmanageable stress is based upon theories which are not applicable to modern society and has received little support in general sociological research at the community level.

6) The studies have concentrated upon extreme cases, referred to as "boom towns," but the reports have attempted to generalize from these to communities experiencing more limited growth.

In brief, it is concluded that little contribution has been made by these studies toward understanding the effects of energy development on local social organization. Substantial contributions have been made by studies which have examined demographic and economic changes in rapidly growing communities and by a few studies of attitudes of local residents of these communities. Social organization effects per se, however, have either been ignored in scientific research or have been examined with scientifically unaccepted methods.

2.3 A Framework for Examining the Effects of Energy Development on Local Social Organization of Small Western Communities

A framework to analyze local social organization can be constructed from the general literature on social organization by considering the following:

1) The essential parameters of social organization likely to be affected by energy development

2) Variables likely to influence the magnitude of these effects

-- Community characteristics
  - History
  - Ecology Demography
  - Culture
  - Interaction Patterns

-- Characteristics of energy development projects
  - Scale
  - Timing
  - Organization

-- Interaction of these

2.3.1 The Parameters of Social Organization

Identification of essential parameters of social organization likely to be affected by energy development requires that the meaning of the term "social organization" be explicated and that a basis be provided for assuming that energy development would influence its components. As noted above, social organization is generally taken to mean the structures and processes by which collective life is ordered. Two general approaches have been used in sociological theory to refine the concept of social organization for use in research. One approach is to focus on structural arrangements among subgroups of a society or community and to infer from these the organizing principles by which observed behavior is patterned. This approach has been especially useful in delineating functional relationships among observed units.

A second approach focuses upon processes of interaction which create and modify patterns of social behavior. This latter approach is somewhat more useful than the former for examining social changes and for developing a framework applicable to projective applications. In that the present study is dealing with changing communities in a changing society, the latter, interactional or process, approach is used here.

Social organization, from either of these perspectives, can be distinguished from ecological organization on one hand and from personal organization on the other. These latter may be assumed to influence social organization and to be influenced by it, but social organization is a distinctive phenomenon important for study in its own right in the case of energy development. At the community level, these three forms of organization can be seen as separate levels of analysis of a single reality of social behavior. A community is an ecological unit and a social psychological unit composed of shared cognitions and attitudes, but it is also a unit within which patterning can be discerned in social relationships.

Organization is provided in social relationships indirectly by ecological conditions and characteristics of the aggregation of individuals. Organization is provided directly, however, by two aspects of social organization itself, namely by culture and patterns and forms of interaction. Culture refers to shared ideas which regulate behavior. Cultural differences among communities and groupings continue in modern society, but these have been greatly reduced by developments in interaction, notably by the extensiveness of inter-community interactions. Chief among these developments in interaction has been the extension of the national/international news media and the proliferation of national/regional interest groups and governmental agencies. The distinctiveness of community as a form of social organization in modern society is determined primarily by the role local social interaction plays in ordering social life for the members of a community.

Community social organization, from an interactional perspective, consists of four interrelated processes, each of which can be inferred from contemporary structural characteristics, but each of which is better understood in terms of the interactions which comprise it. These processes are differentiation, extra-local linkage, stratification, and integration. Differentiation is the process of expanding the range of values and interests represented in a community. Extra-local linkage is a process by which resources and demands flow between the community and the larger society (both ways). Stratification refers to the differential distribution of access to resources for meeting needs among population groupings. Integration is the process by which the relationships among people in a community are coordinated and interconnected. These processes are interrelated in a number of ways (e.g., differentiation increases linkage which influences stratification which affects integration), though each, it may be assumed, has unique sources of variance. As noted, these processes can be examined in terms of the influence of ecological, social psychological, and other variables upon them and in terms of their consequences for other variables.

2.3.1.1 Differentiation

Empirical research on differentiation suggests several ways in which it might be influenced by energy development, in the general case. Growth in population, for example, other things more or less equal, increases both demand and capability for increased differentiation. Economic changes associated with energy development can result in greater differentiation of industry and occupational characteristics of the community and in differentiation of interest groups which enter into community interaction. Ethnic and cultural diversity may also be increased by energy development, stimulating differentiation of structures for meeting new needs and demands and for responding to greater diversity of behavior. A series of studies in social anthropology and sociology have provided strong support for the proposition that increased differentiation is virtually an inevitable consequence of population growth in modern society. There is also some evidence that differentiation follows a more or less predictable, cumulative pattern, with levels of specialization in various interest fields (sectors) tending to be consistent with one another. "Gaps" in differentiation (i.e., imbalances which occur when levels of differentiation are inconsistent among fields), have been hypothesized as causes of stress, in the short-run, and as causes of mobilization of community action.

Differentiation in modern society increases interdependence -- basically because of the inherent limitations of specialized structures -- but increased differentiation presents special problems of community integration -- because of the greater complexity and scale of units to be integrated.

2.3.1.2 Extra-Local Linkage

Linkage to the larger society is likely to be affected by energy development because of an increase in the mechanisms of linkage which have been identified in many studies. These include newcomers who maintain connections outside the community and bring ideas, practices, and commitments from the larger society into the community; organizations which play a role directly in energy development; organizations of the larger society which enter the community or expand their activities in it in response to increased demands for services (e.g., health, retail, protective); and resource-exchange interactions which accompany export of energy resources.

2.3.1.3 Stratification

Stratification in the community is likely to be influenced by energy development in a number of ways. Increased flow of resources (and demands) into a community has been found to produce, over the long-run, increased opportunity for equity in local distribution of access to economic resources and services for meetings needs. Many studies have shown, however, that the relative statuses of some groupings might be reduced, at least over the short-run, by certain types of economic changes. Rural industrialization has had little effect on the poverty experienced by depressed populations. Increased cost of living likely to result from an overall increase in local economic demand can present potentially serious problems to those on fixed incomes and to those who cannot acquire jobs or benefit directly in other ways from the growth.

Stratification is also influenced by the occupational distribution of a local work force, which is also likely to be influenced by energy development. The power vested in a local political or economic elite or in those who control vital economic resources is likely to be affected by energy development as new power figures -- individuals and groups -- enter into competition in local interaction. Several studies have shown a tendency for basic economic power to be removed from the community by developments which increase the significance of the larger society in community affairs. Thus, energy development has the potential of reducing the relative statuses of some groupings while increasing those of others.

Another body of studies indicates that changes such as energy development can increase the extent of status inconsistency in a local population. This occurs because there are multiple, numerous hierarchically structured criteria by which relative status is allocated in modern society. Inconsistencies might be created between levels of income and consumption because of gaps in service differentiation, as between level of family status in community history and level of power in contemporary decision-making. There is some evidence (especially in studies of suicide) that such status inconsistency can produce stress in interpersonal relationships and personal organization. (See especially sections 3 and 4 for more explicit discussion of how political and economic changes can interact with the stratification system.)

The effects of energy development on community integration have been at the heart of public controversies (particularly in the press) over energy developments. As noted above, little systematic research has examined these effects directly. The general literature on community integration, however, suggests several potential effects. Increased differentiation and extra-local linkage present special problems of integration; but these also carry potentials for new, more dynamic forms of integration to emerge. From the general evidence, critically variable in this change appears to be the degree to which a community is integrated prior to the change on a basis which allows community residents to take action to manage the change process.

Integration is also affected by changes in stratification. In general, increased equity increases the potential for integration, although integration, particularly on a traditional basis, is attained to some degree under conditions of inequity. Increased diversity of cultural backgrounds requires increased complexity of integrative mechanisms. There is, however, substantial evidence from studies of community change to indicate that integrative mechanisms appropriate to a larger, complex, vertically linked society can be articulated under some conditions in rapidly growing communities. Most major theoretical perspectives in sociology carry an implicit assumption that integration is a natural disposition in social life because of objective interdependency and similar characteristics among people who live together, but one which can be restricted in expression by extant social conditions.

These restrictive conditions appear to occur under extreme conditions of differentiation and rate of social change. Below some hypothetical threshold on these rates (differentiation and social change), integration is restricted by inadequacies in the availability of resources and services for meeting needs. Above some hypothetical level of optimal social conditions, integration is restricted by the sheer scale of units to be coordinated and by the speed with which change occurs. These two threshold points probably differ from community to community, according to other site specific social conditions such as ecological and cultural characteristics, and they probably change over time in a society.

Modern society has been dominated over the past century by increased significance of large scale division of labor and by concentration of population in large metropolitan centers. These two processes have produced many benefits as well as costs for the society as a whole and for residents of local communities. During the last decade, there has been evidence -- in population movement and in economic organization -- to suggest that a threshold in the benefits of scale (size of community) has been reached or exceeded. Decentralization has been occurring, resulting in growth of population and economic activity in many rural areas adjacent to large cities and in more remote areas, such as the Intermountain West and the Southwest, which offer new locations for both people and economic investments. If this change represents a trend in the larger society, rather than just a temporary fluctuation, it could be interpreted as being partly the result of the integrative mechanisms associated with the previous patterns having reached the limits of their capability. In the outlying areas growing rapidly as a consequence, benefits may be derived from further development of integrative mechanisms.

2.3.2 The Relation of Personal Organization to Social Organization

The components of community social organization discussed above can be used, as suggested, either as dependent variables in a study of change or as independent (or intermediary) variables which might influence personal well-being. Several theoretical conceptualizations of the relationship of personal organization to social organization have been used in sociology and related fields. The literature on western energy development has been informed mainly by one of the most simplistic and most poorly supported of these -- specifically by a social causation model that assumes that personal well-being is affected primarily by social conditions. This, as noted above, has been used in conjunction with the assumptions that urban development and speed of change are inherently disintegrative of social order -- and thus, by extension from this perspective, of personal organization.

A view more consistent with the scientific literature is that personal organization and social organization exist as overlapping but separable fields in which multiple forces converge to produce order and change. Personal organization, from this perspective, is influenced by an array of forces only some of which are related to social organization. Among those forces in personal organization affected by social organization only a restricted number are directly related to social conditions in the community in which the individual lives.

Experiences of individuals in a series of communities in a highly mobile society influence outlooks, coping skills, and other dispositions. The pervasive influence of conditions and changes in the larger society on individuals in specific localities (e.g., changes in the national economy and in international relations) means that nonlocal forces also affect the personal organization of those who do not move from community to community. The relationship of personal organization to community social organization, while restricted in modern society, can be assumed to be of continued importance, however, because of the significance of immediate, concrete reality in personal organization. The community is the most comprehensive unit of social organization with which the individual has direct contact; thus, the organization of this relationship has considerable potential for affecting those aspects of personal organization which are products of immediate social experience.

One of the problems of measuring the extent of the influence of local social organization on personal organization is that the statistical measures of this relationship have tended to consist of rates of occurrence of rare events, such as suicide, homicide, and onset of psychotic disorders, which, even at high rates, would be expected to be extremely rare in small population units. The practice in epidemiological research of not calculating rates where number of occurrences is less than twenty, or population is less than 50,000, means that little is known about trends in incidence of these events and conditions in specific small communities.

Alternative procedures of measurement (e.g., interview protocols which attempt to estimate the incidence of psychiatric distress in populations and attempts to infer stress levels from sales of tranquilizing drugs) have produced much controversy and little concensus. Further, rates of many phenomena taken as stress indicators have been shown to be affected critically by population composition (which denotes the population which is functionally "at risk" for many stress indicators; e.g., young adult males of depressed minority status are disproportionally "at risk" of being arrested for crimes against persons) and practices of reporting agencies (e.g., rural-urban differences in mortality rates are generally unreliable because of the tendency, found in special studies by the Public Health Service, for places of residence of rural people to be recorded on death certificates as being in nearby urban centers). For these and other reasons, a strong suggestion from review of recent literature on social factors in personal organization is that this topic be approached with great caution in environmental impact assessments. A more appropriate strategy for assessing social consequences of energy development is to focus on changes in social organization as the dependent variables. It is the changes in local community organizations which result in local influences on individual well-being. As should have become apparent from the preceding discussion, assessments which focus on measures of personal organization or disorganization are confounded by the fact that it is exceedingly difficult to separate the causes of personal organization from personal disorganization. Factors influencing personal organization include genetic structure of the individual, personal biography, national and international events, as well as local social conditions.

Assessment of changes in local social organization address the problem of impacts caused by development in a more straightforward fashion. The inputs of development can be identified and measured. The way in which these inputs interact with existing community characteristics can be reasonably measured. Then the effect of these changes on local social organization can at least be inferred. More will be said below about the range of certainty in forecasting local community organization changes and its meaning for community and individual well-being.

2.3.3 Variables Influencing the Magnitude of Effects: Community Characteristics and Characteristics of Development

Two categories of independent variables may be identified from literature describing the effects of exogenous forces on local community social organization: (1) characteristics of the community prior to development, and (2) characteristics of the change inducing force. These can be expected to have both independent and joint (interactive) effects on community and should be considered in an analysis of local responses to energy development.

1) Previous experience of the community population with energy development projects or with other periods of rapid growth

2) Ecological-demographic structure of the community
   -- Distance from a metropolitan center
   -- Size, density, and diversity of the local population aggregate

-- Prevailing pattern of population change (e.g., rate of population growth or decline over previous decade)
-- Economic base of local sustenance organization (e.g., whether agricultural, industrial, governmental, etc.)

3) Cultural organization
-- Homogeneity-heterogeneity of ethnic and/or religious identities
-- Values and attitudes as carried in cultural rules which will relate to development

4) Interaction patterns and structures in social organization (i.e., initial characteristics of those dependent variables prior to development)
-- Differentiation
-- Extra-local linkage
-- Stratification
-- Integration

A general proposition (supported by previous research on social change) is that the social effects of an energy development project of any given type and scale will increase with the degree to which it is inconsistent with existing characteristics of the community. That is, less effect should be expected in a community with an extensive history of energy development than in one with little growth experience, particularly if the latter community were small and isolated with a homogeneous, little differentiated culture. Previous differentiation should increase the likelihood that structures and processes within the community could absorb growth, and previous linkages should reduce the likelihood that new linkages would threaten existing processes.

A local stratification system with higher mobility and greater equity would likely be less negatively affected by an energy development project than would one based on rigid ordering of sharply delineated social classes. A general proposition noted above is that severity of effects of energy development and effectiveness of local coping would be influenced critically by the degree of integration of action and leadership processes in the community.

Energy projects, of course, differ from one another in important ways which influence the nature and magnitude of their likely effects. Major project characteristics which can influence local social organization are:

1) Scale of the project,
2) Timing of inputs into the local economy, and
3) Organizational characteristics of the project developer.

Differing scales of a project clearly will have different effects on local social organization. The inputs of dollars and people from mining operations are many magnitudes less than the amount of inputs of these variables for coal generation or processing plants.

Timing of a development is important both in terms of when a project commences and in terms of duration of the construction and operation phases.

Organizational characteristics of the developing entity are important in numerous ways. Past experience of a corporation in working with rural communities determines in part how it attempts to interface with a community. Other organizational linkages of the developer will help determine the nature and magnitude of extra-local linkages which appear in the community. Rural Electric Cooperatives (REA's), multi-national energy companies, and insurance companies have different historical experiences with rural development and different linkages with the regional, national, and international social system.

The importance of interaction between community characteristics and project characteristics can be illustrated by considering (as has been done in several studies of water resources development projects) the entry style of the "sponsoring" agency on the one hand and the level of integration of the local community on the other. An interventionistic (i.e., "heavyhanded") entry into a community that is well integrated is likely to produce conflict and resistance. If the external agency has the "strength" to overcome this (or can "coopt" the local leadership), integration in the local community is likely to be lessened by the experience. A collaborative style (working with local leaders and officials to solve problems) would likely enhance local integration and could increase the effectiveness of problem solving.

Where local integration is lacking, the external organization faces little local resistance to an interventionistic style. On the other hand, there is little prospect that local leadership will be effective in solving problems. An investment in basic community development (i.e., in trying to strengthen local integration) would be required to enable local leaders to take necessary actions. This problem is apparently being faced in some "company towns" in which the "company" would like to be relieved of some of the responsibility of planning and development of needed facilities but in which little "indigenous" leadership has emerged to assume this role. At least three aspects of the interaction of community characteristics and project characteristics are suggested by this illustration as variables to consider in assessing the effects of energy development on community social organization:

1) Extent of dissonance between project characteristics and characteristics of the community (e.g., previous history, existing facilities, existing interaction patterns, etc.)

2) Extent of collaboration likely to occur between project sponsors and existing community leaders

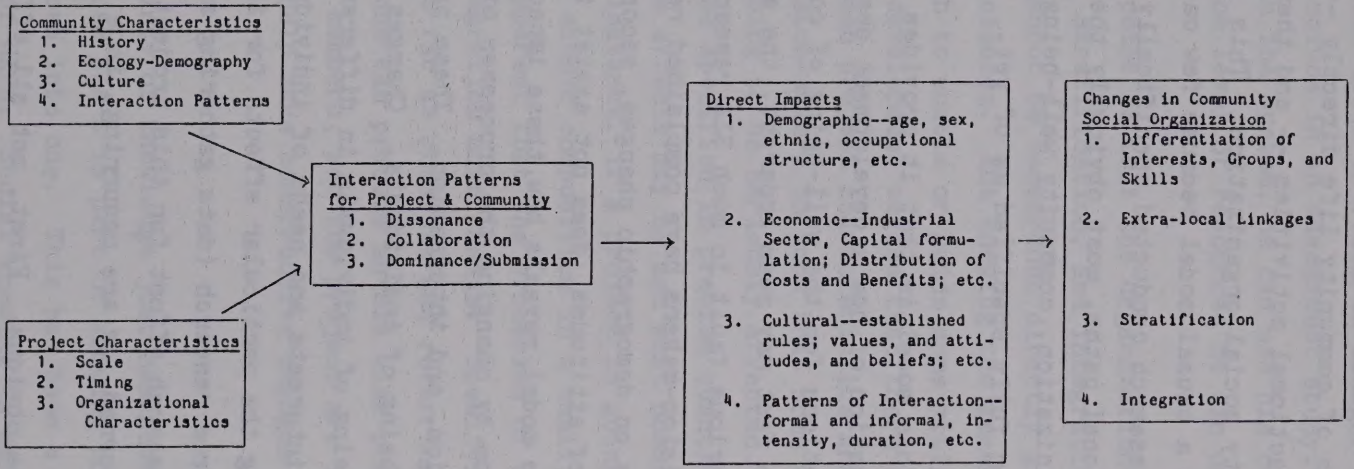
3) Relative strengths of external organizations and community leadership and organization

2.3.4 The Importance, Utility, and Limitations of Assessing Impacts through a Local Social Organization Framework

The descriptive model of variables which needs to be considered to assess the effects of energy development on community social organization and, therefore, eventually on individual well-being, is displayed in Figure 1. The figure indicates that changes are likely to occur as a

Figure 1

Major Parameters Through Which Energy Development Affects Community Social Organization and Individual and Community Well-Being


Community Characteristics
1. History
2. Ecology-Demography
3. Culture
4. Interaction Patterns
Project Characteristics
1. Scale
2. Timing
3. Organizational Characteristics
Interaction Patterns for Project & Community
1. Dissonance
2. Collaboration
3. Dominance/Submission
Direct Impacts
1. Demographic--age, sex, ethnic, occupational structure, etc.
2. Economic--Industrial Sector, Capital formulation; Distribution of Costs and Benefits; etc.
3. Cultural--established rules; values, and attitudes, and beliefs; etc.
4. Patterns of Interaction--formal and informal, intensity, duration, etc.
Changes in Community Social Organization
1. Differentiation of Interests, Groups, and Skills
2. Extra-local Linkages
3. Stratification
4. Integration

result of the interaction of project characteristics with community characteristics. The interaction of these characteristics then influences several aspects of community life directly -- demographic, economic, cultural and interactional activities -- and these effects create changes in community social organization. This is a descriptive framework rather than a causal model because few causal propositions have been provided by research conducted specifically with energy development and because additional paths, most obviously the direct one between community social organization, community well-being, and individual well-being have not been fully specified as of yet.

The value of this model is that it provides an understandable theoretical explanation of how a development creates social changes which have implications for the well-being of communities and individuals. While this fact may seem apparent, the absence of such explanation has been a serious fault in much SIA research. BLM managers as well as other decision-makers have complained repeatedly that simply presenting numbers on demographic changes, secondary economic effects, and distribution of attitudes does not assist them in their decision-making. The above model reveals how these impacts alter a community's social organization by changing the processes of differentiation, linkages, stratification, and integration. These processes, in turn, affect the overall well-being of individuals. Changes in these processes affect the well-being of individuals in different ways according to the characteristics, interests and needs of individuals or groups of indivuals. Specifying the particular effects for individuals, groups or communities requires research (data gathering and analysis) for specific projects. The research effort for this project will involve showing how these effects occurred, or are occurring, in a few communities.

Two points are obvious. First, not all effects in this model can be specified for any given project because of limitations of time and resources and because researching of some of the effects is presently beyond the state of the art in the social sciences. But, these limitations do not detract from the value of the model. The model presents a systematic and understandable explanation of how major social effects occur in a community confronted with development. This knowledge enables a decision-maker or research manager to prioritize what variables he will include in an assessment study. Since the model tells him the variables in the system, he can use his own professional judgment once he knows the level of resources he can cover in his assessment.

The second point is that the organizational processes -- differentiation linkages, stratification, and integration -- are abstract concepts that probably cannot be researched directly given the state of knowledge of the social sciences. But knowing the general state of these processes is enough to enable or guide some mitigation efforts. Knowing before a large development begins that there are major and apparent mismatches between project characteristics and community characteristics can enable decision-makers to know that some community organizational processes are going to be seriously affected. Even if the magnitude of effects cannot be specified in precise quantitative forms, it is useful to know what the effects may be and what community processes may be involved. For instance, if a project is going to place a large work force of varied ethnic composition in a small, homogeneous Mormon community, it is apparent that the processes of differentiation, stratification, and integration must change. Specifying the exact nature of these changes as far as possible and referring to known research from similar situations can produce an SIA with practical value. If the BLM, local community members, and the project are informed well ahead of time, they can help make constructive changes in these organizational processes.

The uncertainty of knowledge just described points to the fact that knowing how to use SIA's is part of knowing how to structure the research that goes into one. This has been a problem with SIA's since the conception of NEPA. Social knowing is different than the knowing of biology or engineering. The actors in a social system are reflective and reactive. Therefore, social knowledge of the effects of a project is transitory -- as soon as something is known it can perturb the very system on which it is based. So, the knowledge of SIA's by nature needs to be integrated with the planning process. In the example of the Mormon community above, once the types of processes which may change are known, this information can (and needs to) become part of the public domain. Agencies like the BLM cannot command that integration processes improve in a community or that the local stratification system be changed. But, by furnishing information on what these processes are, how they work, and how they may change given no action, the agency may assist or facilitate in getting private and public actors to begin working for constructive outcomes.

This section has provided an overview of the importance of local community organization, its composition, and the nature of changes that may be induced by developments. The following sections review specific organizational components, activities, and groups which are of major importance in rural western communities and describe how they may interact with the four major processes of community organization described here.

REVIEWS

Brenner, M. Harvey
1979 Long-term implications of current budget and economic trends on unemployment, minority business, and education. Testimony to Task Force on Human and Community Resources of the Committee on the Budget, U.S. House of Representatives, Ninety-sixty Congress First Session, 20 July.

Summary: Brenner's statement is in the form of a paper reporting results of his multiple regressions analysis of influences on stress indicators in the United States' population over the past several decades. His independent variables were time (log), unemployment rate, inflation rate, and per capita income. The independent variable were race-specific mortality rates (total and by selected causes including homicide, suicide, and others), and rates of incarceration in mental hospitals and penal institutions. The general hypothesis, derived from psychological theories (especially those of Selye and Rahe) was that abrupt change, whether desirable or undesirable, produces pathology. His analysis supported this hypothesis, but he concluded that "undesirable changes such as unemployment and income loss are substantially more generative of pathology." The latter qualification was especially pertinent to the effects on homicide and suicide, which, he said, are more immediate results of stress than other pathology indicators.

Theoretical Framework: This is the most impressive evidence generated to date in support of Durkheim's theory of integration. Brenner, however, did not cite Durkheim. He relied instead on etiological theories, for example, on the theory that multiple changes in an individual's life circumstances foretell onset of serious illness. An ecological fallacy is obvious in his interpretation.

Methods: Two significant improvements over previous social indicators research can be noted in this study, namely the use of multiple regression methods and the use of standardized units (years and the entire U.S. population) in time series analysis. Some of the mortality rates used, however, are suspect in that they pre-date completion of the national death registration program, they do not (apparently) include adjustments for decennial changes in definition of mortality types, and they have not been adjusted for variation among states and regions in adequacy of reporting-labeling practices (the latter criticism, of course, is not unique to this study).

Data: The methods employed can be replicated with data on small units, such as states and county types aggregated among states. The data sources used by Brenner might also be useful.

Commentary: While mortality and incarceration data are appealing substantively, they probably cannot be used effectively in the study, certainly not on specific communities. Small numbers and the likelihood of temporal fluctuation in rates make such measures highly unreliable. The use of multiple regression methods, however, should be encouraged for obvious reasons. Brenner's findings offer impressive support to the idea that rapid change can be disruptive of individual well-being. His use of an individual-level theory, however, means that he has not indicated a plausible theory as to how change at the macrolevel produces pathology rates. Further, the correlations at the national level cannot be taken as an indication that similar results would obtain in subunits of the national population, such as communities.

Clinton, Charles A.
1978 Shiloh: the little county that could -- and did. Rural Sociology 43:191-203.

Summary: This article describes the rapid evolution from folk to industrial society in an agricultural rural southern county. The author contends that the county benefited from this rapid transformation in terms of economic well-being and improved services. The industrial growth was planned in stages by county officials and is described as desirable and supported by local residents. The conclusions are that adequate planning can lead to orderly beneficial development. This conclusion is in contrast to the economic leakage, small economic multipliers, and poor conversion of tax revenues described by Summers. Shiloh experienced sufficient conversion of taxes to permit improved schools and other government-provided services. The promises are for sustained healthy growth.

Theoretical Framework: The framework employed is that of case study of a county for a limited period of time. The author describes the approach as eclectic, combining formalist and substantive traditions. Such an approach is advocated for community studies.

Methods: This study is based upon field observations and secondary data. No survey data are provided nor is the representativeness of impressions evident.

Data: Data are primarily before-after documentation of services provided, tax revenues generated, and per capita income.

Commentary: Although this study is conceptually relevant to western coal communities, it is both conceptually inadequate and methodologically weak. Informal characteristics of social structure are not mentioned. Formal characteristics and data supportive of their analysis are selected unsystematically. The representativeness of the location is unclear. Consequently, both the data and the conclusions have limited utility.

Flax, James W.; Wagenfeld, Morton O.; Evans, Ruby E.; and Weis, Robert J.
1979 Mental Health and Rural America: An Overview and Annotated Bibliography, Washington, D.C. Alcohol, Drug Abuse and Mental Health Administration, U.S. Public Health Service, HEW.

Summary: This overview section, describing general social trends in rural America, draws heavily on a review published in 1978 by Thomas R. Ford. The most significant, recent studies of mental health in rural and urban places are summarized, and the quality of research in this area is discussed. An annotated bibliography contains several hundred summaries of recent works on rural communities.

Theoretical Framework: Several theoretical perspectives are cited; none is used.

Methods: The "method" of reaching general conclusions and of selecting articles for annotation are questionable. The result is a survey of mixed value.

Data: No data are presented.

Commentary: The value of this work lies in the fact that it is the first attempt in nearly a half century to bring together the literature on this topic. No synthesis is attempted, but two general conclusions are put forward. One is that there is more ambiguity than conclusiveness in the field of research which is reviewed. The other is that the general consensus of recent studies with fairly broad coverage seems to question the popular hypothesis that mental illness is more prevalent in urban than in rural areas. The annotated bibliography, though based on a relatively unsystematic search and selection process, provides good, brief descriptions of many studies. In examining these descriptions, one is struck by the paucity of comparative designs. Many studies of rural areas have used the Midtown Manhattan study (Srole, 1962) as a base for comparison and have drawn conclusions from whether rates of disorder and/or symptoms found in the rural settings were higher or lower than those found in Manhattan. This is a procedure of questionable scientific value. A great variety of assessment methods have also been employed; and it is apparent that, to this point, there is little consensus as to how mental health and/or disorder should be measured. Treatment records are notoriously inadequate as indicators of prevalence of conditions needing treatment. The overall situation in this area of research is such that investigations might do well to focus on more specific phenomena such as "satisfaction" and role performance than on generalized conditions (or "labels") such as health and mental health.

Martindale, Don, and Hanson, R. Galen
1969 Small Town and the Nation. Westport, Connecticut: Greenwood Publishing Corp.

Summary: The trends toward urbanization in the United States have created structural tensions in small towns because they increasingly fall under the domination of large urban centers. This statement summarizes the authors' principal theme as they seek to demonstrate the validity of three hypotheses: (1) the lines of tension between local and nonlocal forces are discernible in local economies, (2) the structure of power and influence is polarized in terms of local and nonlocal interests, and (3) the major lines of stress in a small town's institutions arise from the conflict of local and nonlocal interests. To test their hypotheses, the authors employ participant observation, interviews with key informants, documents from civic organizations, and a small amount of survey data. Instead of focusing on any single major conflict to prove their points, the authors spend considerable time discussing the attitudes of residents, both oldtimers and newcomers, with respect to community services, perceptions of small town life, future plans, etc. They also devote attention to more subtle types of change such as the establishment of federal programs in the community, and the consolidation of schools and churches. The authors argue that the data support their hypotheses as they find significant differences between long-term residents and recent in-migrants.

Theoretical Framework: The theoretical framework of juxtaposing local and translocal forces as a source of community tension is an established theme in community literature, with Roland Warren being a main proponent of this idea.

Methods: Although their survey was a mail questionnaire with barely a 65 percent return rate, the methodology seemed reasonable. The final N was slightly over 100 which represented three groups: oldtimers, newcomers, and ex-residents. Because of the small sample size which was subsequently split three ways, the reliability of their results should be questioned. Fortunately, this is not the only data source they employ.

Data: See the above comments.

Commentary: With respect to social welfare, this book addresses the impact and the tensions created by the intrusion of outside forces. In relation to the other literature, some of the discussion here relevant is to the impact of change or long-term residents as it was described for boom towns in Bates (1978).

Miller, Michael K., and Crader, Kelly W.
    1979 Rural-urban differences in two dimensions of community satisfaction. Rural Sociology 44:489-504.

Summary: This article examines the interrelationships between economic and interpersonal satisfaction in rural and urban places. The conceptual contribution is the delineation of the differences between these dimensions of community-related senses of well-being. Although urban residents reported higher economic satisfaction than rural residents, rural residents reported higher interpersonal satisfaction. Suburban resident satisfaction fell between the extremes on each scale.

These findings are interpreted in classical conceptual terms along the rural-urban continuum. The hypothesized differences, that rural persons would evaluate their lives more personally and egocentrically, are supported by the findings. That is, the supportive and personal social structures of rural areas are more personally satisfying even if economic well-being is less.

Theoretical Framework: The rural-urban continuum is examined in terms of Wirth's linear transition model. The data generally support the gradual evolution from rural to urban social structures and are associated with a reduced importance to kinship, neighbors, and other informal relationships and an increased importance of formal structures such as monetary economies and services.

Methods: The data were drawn from 595 interviews of persons in five Utah counties ranging from 100 percent rural to 95.1 percent urban.

Data: The data are relevant to this project because they clearly indicate differences in rural social structure. They also deal with counties which are within the project region and share many similarities with rural counties in general and Mormon-majority counties, specifically.

Commentary: The paper is a concise statement of two dimensions of well-being which often are not differentiated in social impact literature. These dimensions are especially important because they pertain to critical differences in the social structure of rural informal places and urban formal ones.

Srole, Leo
1978 The city versus town and country: new evidence on an ancient bias, 1975. In L. Strole, and A. Fischer, eds., Mental Health in the Metropolis, The Midtown Manhatten Study. New York: York University Press.

Summary: This is an expanded version of an article which appeared in the American Scientist in 1972. It contains a historical critique of the assertion that rural and small town life is more supportive of mental health than is city life and a review of evidence concerning physical health, psychological symptoms, suicide rates, and crime rates. The basic contribution of this chapter lies in: (1) its detailed critique of Dohrenwend and Dohrenwend's conclusion from their review of field studies that urban rates of mental disorder are higher than are rural rates, and (2) its explication of data from a national survey of psychological symptoms.

On the basis of Srole's critique, the Dohrenwends have altered their review, and now place major emphasis on the need to specify the type of disorder in drawing conclusions from previous research on rural-urban differences. The data on psychological symptoms presented in Srole are taken from a study conducted by the Public Health Service (NCHS) in 1960-62 in which 6,700 adults were examined and were asked to indicate whether they had recently experienced any of twelve symptoms of psychological distress. The results were published by PHS in 1970 but without a rural-urban breakdown. Srole acquired the data from PHS and conducted an analysis of the white population classified by size of place of residence. He found a strong negative relationship between age-adjusted mean symptom scores and community size for males and females. Srole concludes that the myth of "urban malaise" has resulted in little attention being given to aspects of contemporary rural life which might contribute to mental disorder.

Theoretical Framework: Srole provides a good critique of the "urbanism hypothesis," but the logic by which he interprets evidence contrary to this hypothesis is also subject to many criticisms. His argument, in fact, is more of an apology for New York City than a theory. Much of his discussion is a response to critics of the city's financial crisis in the early 1970s.

Methods: The data cited and reviewed by Srole are the best and most extensive available on rural-urban mental health. Nonetheless, they are suspect. The "psychological symptom scores," for example, are based on self-reports and cover items of questionable significance (e.g., "Do you ever have sweaty hands when you are feeling anxious?" "Have you ever felt that you were going to have a nervous breakdown?"). The significance of the measures lies in the fact that previous studies (using methods which might also be questioned on many grounds) have not provided detailed rural-urban breakdowns.

Data: See the above comments.

Commentary: The most general conclusion to be drawn from this and several other studies is that the popular view that rural life is more supportive of well-being than is urban life is not supported by the evidence. The state-of-the-art in the field, however, is such that the opposite conclusion is also not supported.

Suzman, Richard M.; Voorhees-Rosen, Deborah J.; and Rosen, David H.
1980 The Impact of the North Sea Oil Development on Mental and Physical Health: A Longitudinal Study of the Consequences of an Economic Boom and Rapid Social Change. San Francisco: Langley-Porter Neuropsychiatric Institute.

Summary: This paper reports the results of an epidemiological panel study of the effects of Shetland's rapid development on the physical and mental health of the permanent inhabitants. The findings suggest that rapid social change and economic development do not necessarily have a negative impact on physical and mental health. This occurred in spite of the fact that several changes indicated a decline in community integration: (1) less time spent visiting relatives and socializing, (2) fewer people speaking the Shetland dialect, (3) satisfaction with the community as a place to live decreased, (4) crime rate increased, and (5) perceived marital strain increased among the men. However, measures of persistent role strains showed a decrease in working in noxious environments, in work overload, and in job insecurity. Financial strain decreased and income grew substantially. There were no increases in the number of stressful life events reported.

Theoretical Framework: No theory of stress is presented in the paper which is essentially descriptive. However, the choices of variables, their measurement and analysis, and their interpretations imply a stress-illness model in the tradition of Leighton, Srole, and Dohrenwend. It is important to note that they enjoin social environment as well as individual attributes as conditioning variables in the etiology of illness and symptom formation.

Methods: The methodology appears to be quite good although little detail is provided. However, longitudinal data with 93 percent reinterview on a wide ranging battery of indexes and scales are a scarce commodity and, if done properly, could be extremely valuable. The authors express an explicit intent to replicate these analyses in the western energy boom towns.

Data: There may be some specialized analyses that could be done with these data; however, to isolate them would require more information about the data file structure than is provided in the paper.

Commentary: This is close to a replication of the "Hennepin Project," and the overall results are remarkably similar. The stress model works very well, but the presumption about industrialization producing stress is in error. The majority of residents who are involved in new industry find it beneficial -- higher income, better working conditions, less financial strain -- and albeit indirectly, other people in the community report benefits. Consequently, it is the people who are "left out" or directly "harmed" in some way who experience stress.

These results lead again to the need to view the community as differentiated. "How will the community be impacted?" must be rephrased to ask, "Who in the community will be impacted in what way?" Newcomers must be recognized as analytically distinct from longtime residents, and also as being an internally heterogeneous grouping.

If one accepts the utilitarian assumption of economics (some economics anyway) that more is better than less of any desirable commodity, and further finds that industrialization brings with it many of the things people desire, then it is not reasonable to expect industrialization to generate stress among those who are able to obtain more. It may be stressful for those who wanted more than they got or those who simply did not want more of what new industry had to offer.

3. POLITICAL ORGANIZATION

3.1 Introduction

Much of the extant literature on the impacts of coal development is premised on the assumption that such impacts are the direct outcome of the level of energy investment, on the one hand, and characteristic of the receiving community, on the other. Outcomes of coal investment for the local community are often portrayed as relatively immutable and predictable. Yet, the literature describing actual impacts is more heterogeneous than this simple model would suggest, indicating that a broad range of socioeconomic effects are occurring for which no clear basis for differentiation exists.

A more complex process is suggested by review of the political, economic, and social organization literature. The literature indicates that a better understanding of this process and of some of the parameters of political organization leading to certain categories of outcomes can be developed. Because the nature of social change, and particularly change in political organization, produces patterns of negotiation whose final status is, at best, probabilistic and not deterministic, it is necessary to concentrate on processes and organization rather than on particular outcomes. The process of negotiation is an intrinsic part of the political organization of impacted communities, as well as of the sociopolitical environment in which these communities are embedded.

Energy investment involves the mobilization of a social surplus that derives from outside the impacted community. An optimistic view of this mobilization is that, when such surplus is invested in a host community, it leads to "development" of the community. By "development" authors typically mean that the community gains additional resources through the investment. These additional resources include a broader tax base (including property, sales, use, and severance taxes), increased local wages, increased local consumption and, hence, enhanced secondary there is a spatial and temporal variability to the distribution of this surplus. The community may be the geographic context in which local surplus from coal development accumulates, but the community is never automatically the beneficiary of such surplus. That is, there is no predictable, invariant mechanism that channels the surplus from the coal resource to the local population. Coal development provides a potential for diffused local benefits; the actualization of this potential is, the literature makes clear, at least partially an outcome of political organization and political process at the local, state, and even to some extent, the national level.

The central distinction the literature review makes is that impacts are negotiated outcomes of economic development. There is no reason to expect coal development to be fundamentally different.

While the current practice of economists has been to view the distributive aspects of economic development as "externalities" and to treat them as "welfare economics," the social reality is that the distributive aspects of economic growth -- the allocation of surplus to various groups -- are an outcome of political organization. Starting in the late 1960s, political and social movements have made the political allocative issues more salient. This has led, on the one hand, to the concerns regarding distribution that are reflected in the National Environmental Policy Act of 1969, which mandated a concern for "human impacts" of all development processes that involved federal agencies in any significant way. Increasingly, moreover, scholars have begun to incorporate the more realistic view of economic development into their work (i.e., to treat the political process as an intrinsic component of the analysis of economic development in the United States). Little systematic research, however, is available for rural communities in the United States on either political organization or dimensions of stratification (inequality) in economic organization. Some systematic research does exist on urban political structure and stratification in the United States. The political dimension in cities has loomed as large as the technical economic development issue because cities have been the locus of organized attempts to change the allocation of surplus, principally through the public sector redistributive capacity (the "welfare system") and only to a lesser extent through direct confrontation with the private sector.1

To identify likely clusters of impacts of coal development in western communities, then, there is a clear need to move beyond existing economic models and incorporate more research on political organization -- the political process partially determines many of the positive and negative outcomes that the literature on boom towns has identified as impacts. A crucial distinction made here is that the outcomes are not direct products of coal development, but of coal development filtered through a political structure that channels the benefits and costs of such development to particular local and extra-local social groups. At the extreme, it can be hypothesized that there are almost no socioeconomic impacts from coal development that are not politically mediated. It is important, therefore, to understand the political mediation process and the unanswered research questions related to it.

3.2 The Nature of Political Organization in Impact Communities

The first problem in understanding how surplus will be allocated in coal-impacted communities is an appreciation of political organization. From the perspective of federal agencies, "political organization" is

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[1] See the extended discussion of NEPA-induced reconsiderations of welfare distribution and related research implications in Allan Schnaiberg, The Environment: From Surplus to Scarcity, New York: Oxford, 1980, ch. VII.

often defined in the popular culture sense vis-a-vis the formal-legal structure in minor civil divisions within which coal is to be mined. The definition, however, encompasses only a part of the relevant political structure. Within the United States' urban political structure tradition, the operational-definition of political organization has been extended through the use of research methods involving both "reputational" and "decisional" techniques. In the former, identifiable political actors in the local community are interviewed to obtain a broader list of local actors who are evaluated as being influential within the broad political processes -- informal as well as formal -- in an area. The "decisional" approach has been operationalized by taking key community decisions and tracing the entire range of influentials who have shaped the final decision. Both methods have their limitations as well as their applicability to coal-potential communities. These are briefly assessed later in this review.

The pertinent political organization of impacted communities is much broader, then, than simply the elected and agency officials that have formal, legal responsibility for anticipating and dealing with surplus generation and community costs and benefits. There is a need to understand the wider range of "influentials" -- individuals who carry substantial political influence because of their economic positions in the community -- and the organizations through which this influence is exercised (often in formal and unofficial ways) and to consider separately the distribution of costs and benefits. For example, major landowners may have substantial influence on local banks, who in turn may exert powerful influence over the allocation of loans for smaller businessmen seeking to expand their enterprises in order to capture locally more of the coal-induced surplus (thereby providing greater local capital through increased profits and/or local employment potential). Many of the secondary employment gains that are anticipated to occur with coal development, for example, are dependent on cooperation from local or regional fiscal institutions whose boards are frequently dominated by powerful local interests. Likewise, expansion of public services is contingent upon this political process. The potential resources from coal development may or may not be channeled toward the resolution of local problems, ranging from mental health to police protection.

Following some of the suggestions in the literature, a rough classification of political organization of coal communities can be constructed as shown in Figure 2, which identifies four types of communities.

FIGURE 2: Classification of Communities by Political Organization

		POLITICAL WILL TO MELIORATE PROBLEMS	
		Yes	No
POLITICAL POWER to MELIORATE PROBLEMS	Yes	I	III
	No	II	IV

A general outcome can be postulated for each type of community. In general, Type I communities are likely to have considerable diffusion of positive benefits of coal production. Type II communities may be able to provide some partially meliorative services to offset the maldistribution of costs vs. benefits of coal production, probably through the public sector, using local, state, and federal resources to offset some of the limitations of local political structures. Type III communities are likely to obtain some limited economic benefits from coal development, but are likely to do little to offset the costs to community groups left out of the benefit distribution. In Type IV communities, few economic benefits are likely to flow very far from the coal operations, and few public services are likely to be developed to offset disruption of the local economy and socio-political structure.

It may be argued that an empirical determination of the "political will" and the "political power" is not an easy task. However, even a simplified approach to determining these structures (as indicated in the community power structure literature) would be a significant advance over the current "theorizing" of impact prediction models. In the literature reviewed for this project, variations in positive and negative impacts are often interpreted as either chance fluctuations, or attributed to some variability in population composition of local "oldtimers" and the labor force of "newcomers." Far more likely determinants of major differences, it would appear, are the intentions and actions (or inactions) of local influentials and officials, and their capacity to influence corporate decision-makers and government officials in the coal development (or other development) impact channelization process. And if this were true in the past, it is likely to be even more true in the future as widespread dissemination of information about past impacts is likely to occur. The Regional Coal Team impact studies are important inputs into the political process, for they will be used by various political actors to shape actions, in anticipation of outcomes, with the consequence that otherwise likely outcomes will be precluded from happening. In this context, it is important to note that there is a distinction between doing precise impact prediction and having socially beneficial outcomes from the impact assessment process. If the impact assessment process is done properly, it will be likely to sometimes identify aspects of political structure that will produce socially regressive outcomes from coal development. Identifying these outcomes -- or validating the likelihood of such outcomes -- is an input of political information that may mobilize previously unmobilized local and regional constituencies. Alternatively, it may legitimate or even induce corrective actions by providing an official caution about the likely impacts, and thus support actions of previously less-powerful segments of the community. For researchers inside and outside the Bureau of Land Management, it is important to note that some impact predictions may be "self-unfulfilling": (i.e., their very publication may provide social feedback that may change the allocative process in ways precisely contrary to the predictions). That is indeed one of the formal mandates of NEPA: to raise to public consciousness (agency and otherwise) some negative outcomes that are likely so as to stimulate corrective or preventive action.

To help focus the research efforts for the BLM Social Effects Project, it is useful to develop some guidelines for understanding and measuring political will and political power in a community context.

3.3 Political Will, Community Stratification, and Response to Coal Development

As noted earlier, a variety of potentially negative outcomes of coal development can occur by failures of the political system to allocate coal-related surpluses more, rather than less, equitably. This failure creates inequity-related outcomes that inhibit access to the new resources generated by coal production for some segments of the local community. In some cases, people's lives can be made worse by the development process, as when public amenities are removed without compensatory provision of new amenities (e.g., public lands taken for trailer parks for new workers, with no new set-asides for equivalent open space for residents); these are instances of absolute deprivation impacts. Equally, if not more important in many communities, the expectations of improvement through coal-related surpluses are not met for community sub-groups. Promises for new jobs, services, amenities, and the like are not met, and/or are met only for certain population subgroups or areas of the community. These are instances of relative deprivation -- relative either to expectations, and/or to achievements of other sectors of the community. They are no less real or action-provoking than absolute deprivations, since support for coal development has often been elicited precisely on the promise of improvement, not stasis, in local conditions.

These deprivation outcomes result in part from the political organization of communities, and in part to the political environment in which the community exists. The distinction was made above between political will and the political power to implement this will. In its most operational sense, political will refers to the material interest structure of the community, which in turn, is an expression of the socioeconomic stratification of the community. The anticipation of the outcomes of coal development reflects the stratification (organized inequality structure) of the community. Thus, anticipatory responses to proposed coal development can be viewed as indicators of community stratification as well.

The use of anticipatory responses as a reflection of community stratification can be demonstrated with the following illustration. Informal interviewing can identify important figures in the community -- inside and outside the local government structure -- for simplicity's sake, this can be done using a reputational model (cf. Domhoff's work for a critique and suggestion for modification). Each of the "influentials" can be asked what their attitudes are towards prospective coal development. However, the questioning must not stop at "support" or "oppose" such development, but must proceed to ask them why they support/oppose a development. If they support development because it will "improve the local economy," the interview should proceed to ask them to specify ways in which the improvement will take place as concretely as possible (i.e., how will jobs, taxes, businesses, etc., materialize? How will this individual act to produce such outcomes -- either directly or indirectly -- again, as concretely as possible?) Through such probing, it is possible to identify to some degree the likelihood that each individual with influence will act to provide more socially progressive or less socially progressive responses to coal development.

When this round of interviews is completed, the validity of the responses evaluated by using a modified decisional approach (seeing what responses these influentials made on recent community matters), there should emerge reasonably accurate description of the stratification system in the community from the nature of the influentials and their responses. Even in the absence of detailed occupational data from the most recent census, this will provide information concerning the life-chances of community subgroups, in terms of the orientations of powerful decision-makers in the community towards changing opportunities. Although there may be exceptions, communities with higher levels of inequality are more likely to lack the political will to use coal development to increase equality. At best, such unequal communities would be expected to experience coal development impacts that do not worsen inequality, but that maintain high levels of past inequality. While the theoretical "need" for coal development may be highest in this inegalitarian setting, the "needed" benefits will not be actualized because the factors that produced inequality (and thus "need") in the past are likely to continue to operate in the future. Important exceptions to this rule of thumb exist: (1) where local influentials (economic and/or political elites) have come to a realization that change is needed, and that coal development offers an opportunity to increase marginal and total equality, without taking away any current assets or powers from existing influential segments of the population, and (2) where changes occur in the composition of local influentials, perhaps from location of new industry in the community or from modification of the community, for example, into a "bedroom suburb" with a more competitive local power structure. These exceptions may prove increasingly important in western communities as new coalitions of environmental-equity movement organizations, coupled with stronger federal and state attention to welfare issues, put increased pressures on the "old orders." It is crucial to note that some of these changes may be incrementally induced; that is, there may be no change of influentials, but the continuous minor, harassing pressures of less-powerful social movement groups may simply raise the costs of maintaining the older stratification system. This is likely to lead to somewhat more progressive outcomes of coal development as the newer political actors essentially negotiate (or accept) some improvement in return for lessening some political pressures. It would be helpful to interview some of these less-powerful actors, and/or to assess their efficacy by questioning influentials about them, and future responses to them.

It should be stressed that the above discussion applies equally to supporters and opponents of coal development. Opposition to coal development may be an outcome of just as regressive a stratification system, for it may reflect a desire to maintain inequality by restraining community growth. Too many authors have glibly assumed a "progressive/regressive" identity with "opposition/support" of coal development. It is necessary to go beyond these simplistic assumptions to forecast impacts and impact-channelization processes.

In summary, then, the measurement of political will involves first the identification of key political actors (and their organizational bases), which reflects the existing stratification system in the community, particulary its more influential levels. Then the attitudes, expectations, and intentions of these influentials vis-a-vis coal development need to be assessed, through some fairly straightforward probing of concrete intentions about what to do with the new (anticipated) coal surplus. For the field research of the Social Effects Project, this same research model can be applied, with the stipulation that actions, rather than intentions, be measured (depending on how long ago the coal development occurred, some mix of past actions and future intentions about institutionalized channeling of coal-based resources can be optimal foci for questioning). The outcome of such research could include a richer evaluation of the "political will" in the community, as shown in Figure 3.

FIGURE 3 Evaluation of Political Will

NUMBERS, TYPES OF SUPPORTERS FOR EACH POSITION	POLITICAL INTENTIONS FOR CHANNELING COAL SURPLUS
______________	Extra-community distribution
______________	Intra-community distribution
______________	- economic concentration only (private sector)
______________	- some economic diffusion (private sector)
______________	- considerable economic diffusion (private sector)
______________	- public services - limited increase
______________	- public services - moderate increase
______________	- public services - substantial increase

This is, obviously, a preliminary approach and should be refined as richer field data are collected in the field component of this project.

3.4 Political Power, Local and Extra-local Dimensions

Given a few tenets of local political organization, no simple conclusions about the predictions of political power can be made. The literature suggests that extra-local ties (vertical integration) assist a local political organization to effectively implement local goals. But it is not clear that this is perfectly symmetrical (i.e., that the observed efficacy of extra local ties in achieving aggregate "community development" applies equally to achieving greater equity in the distribution of benefits and costs within the local community). Much of the past literature has focused on aggregate development goals, and gross indicators of community economic growth, while leaving aside many of the equity dimensions. This is especially true in American urban research, unlike that conducted in Third World development studies. Stratification implications of development are a frequent component of such studies in Third World countries, many of which are carried out by rural sociologists from United States land grant institutions. But ironically, almost none of these sociologists or departments do equivalent work in United States rural communities.

In general, critical American theorists have suggested that many of the external forces inducing local development have strong interests in concentrating profits and in preventing their diffusion throughout the local community. Thus, for example, coal corporations struggle to resist local taxation (and state taxation) of coal and coal properties to protect profitability, thereby restricting local resources to deal with new problems (absolute deprivation) and frustrating expectations of improvement through coal development (relative deprivation). Two limitations should be placed on this assumption, though. First, while there is competition between localities for coal development, which enables energy corporations to retain more coal-related surplus, there is also competition between energy corporations for this coal and other energy resources. Second, because of the activities of national, regional, and even local social movements and institutions, welfare dimensions of coal development have, as noted above, become terribly salient in local, regional, and national media and public discourse. Many of the federal and state agencies in the West that traditionally treat development as a technical issue, dealing only with elected officials and local elites and ignoring serious maldistribution issues, face a somewhat different operating climate today. In part this is due to a relatively recent phenomenon -- organized social movements operating across localities to push an agenda of environmental protection (in the name of social welfare), frequently link forces with less-organized, discontented portions of western (and other) community populations, who may have been excluded from the past benefits of resource extraction/utilization. An unstudied aspect of this and related political forces is that some of the active participants in the new movement are remnants of the participatory movements of the later 1960s and early 1970s, and many gained political experience by their earlier activities. If popular literature is to be believed, many individuals from this movement retreated from the politically intractable urban areas of the East, Midwest, and West, and migrated to smaller towns where they could lead "alternative" lifestyles, including labor-intensive agricultural and craft activities for their livelihoods.

The reality of economic, social, and political interdependency of these communities may become apparent to these individuals, and the "threat" of coal development may undermine their retreatist expectations. The networks of interaction of these individuals are more than local -- their past experience, communications, and identification often include national or regional contacts with other social movement organizations and individuals.

Thus, it appears that there are novel elements of political power in the western situation. Welfare-oriented policies may find support both from prevously-unconcerned federal/state "mainstream" agencies (such as the Bureau of Land Management), and from newer political coalitions that stem from equity and environmental movements of the 1960s and 1970s. Some of the political power of these organizations to raise equity consideration is enhanced by the newer equity concerns of the national environmental organizations, such as the Natural Resources Defense Council (NRDC), and the focus on welfare information in formal and informal impact assessment that such organizations have undertaken.

If it is true that much of the literature suggests political apathy among the less-affluent in western small towns and rural settings, it is nonetheless true that this is likely to be more variable today than in earlier periods. While the model of Springdale that Vidich and Bensman (1958) present suggests that commuters who use small towns as "bedroom suburbs" will not necessarily be politically active, there are new residents who both work and live in these towns with experience and expectations of political activism who are likely to become involved, and who will perhaps stimulate the previously-apathetic to become mobilized. This would make the local community power structure more competitive, and thus more open to equity concerns from the less-powerful segments of the community, whose numbers are a trade-off for the personal status/influence of community "influentials." Thus, communities undoubtedly exist which will not simply abdicate control to external forces -- particularly energy corporations --but which expect to have some hand in channeling the effects of coal development.

Some of the literature reviewed indicates that local power structure competition is important for maintaining access to political power by the effectively disenfranchised (those typically reported as most impacted negatively by coal development in boom towns). At the same time, some evidence exists that such competition could lead to extreme local fragmentation, and thus effective immobilization of the local power structure, leaving decisions to be made extra-locally -- by private and public sector organizations and decision-makers. It is difficult to predict, given the limited information available, which (or whether) local power structures in coal areas are likely to become competitive or fragmented, but this is certainly a fruitful area for both Social Effects Project research in the field, and potentially, for BLM Regional Coal Team social impact assessment research prior to community site selection.

At the research level, then, the survey of the local power structure should attempt to incorporate the newer social movement representatives who may be less personally influential, but who may be able to mobilize substantial organized strength to influence local decisions. Because of their positional power and influence, the representatives of state and federal agencies should also be included. If possible, energy corporation representatives should be tapped (including the field of eligible bidders for the coal leasing sites), to gather their expectations. For all of these, expressions of political will (as discussed earlier) should be gathered. Beyond that, a sequence of questions about their expectations of political efficacy should be used, asking whether they anticipate that they will "win" or "lose" in the battles around surplus allocation. Finally, they should be questioned about how they expect to act in this winning or losing situation -- the concrete strategies that they expect to follow.

From this information, it may be possible to construct some crude measures of likely political power alignments, such as shown in Figure 4.

FIGURE 4 Likely Political Alignments

Political Will Direction Type	Group/Individual	Local Strategy Likely	Extralocal Stragegy Likely	Perceived Efficacy
(see Section 2.3)		Passive	Passive	High
		Cooperative	Cooperative	Moderate
		Conflictual	Conflictual	Low
		Confrontational	Controntational	

By combining local and extra-local cooperative and conflictual alliances, and the expectations from participants in these alliances, it may be possible to summarize and aggregate the perceived outcomes of political power application in this field of forces. If researchers feel competent, they may make their own assessments of political efficacy of participants, and come up with an independent judgment of the likely outcomes as a component of impact assessment research. By treating past outcomes in the research phase of the Social Effects Project and attempting to build some insights about the predictability of political power applications in the negotiation of outcomes of coal development, it may be possible to provide guidance for future impact forecasting.

Alternatively, it may be possible to ask participants in these areas, who were involved in earlier political negotiations about coal impacts, to report their own perceptions of efficacy and why they were or were not validated by the negotiation process. These people can also be used as informants; reporting on what they have learned will be crucial to implementation of particular distributive outcomes from coal development, in terms of political negotiations.

Little is available for guidance in this area, especially regarding rural areas during the period subsequent to the 1960s and early 1970s participatory social movements. Therefore, it seems wisest to have as broad a strategy for research and impact assessment data as possible. The analytic net should be cast as widely as possible, to cover insights and expectations about as many strategies as possible, and from as many participants (past, present, and likely future ones) as possible. It is likely that the political models of such communities are as outdated as are many economic and social models. These are not the workers/peasantry of the Third World, but people who have been touched by the media and the political currents of the social activism period. Indeed, as cities have become more quiescent and one-directional in their growth-seeking, as Molotch (1976) points out, it is possible that rural areas and small towns have taken on more of the political complexities that were previously associated with urban areas.

3.5 Toward a Methodology of Political Organization Evaluation

3.5.1 General Considerations

While the approaches to studying political will and political power may be novel in the context of impact or effects research, there is a rich tradition elsewhere in pursuing such findings. In his critical review and synthesis of the urban and national power structure analysis, G. William Domhoff makes the following assessment:

> The analysis of power structures has certain basic methodological components... Power structure research involves mapping networks of people, institutions, and money flows, and then doing content analyses of the verbal and written outputs of these networks... Methodologically speaking, what differentiates various studies is the accuracy of their membership indicators, the completeness of their networks, and the type of power indicators they utilize (1978:145).

Since the emphasis in the Social Effects Project and in the Regional Coal Team social impact assessments is not primarily the evaluation of the political organization as an end in itself, but in tracing the likely outcomes of political negotiations around coal impacts, some of Domhoff's comments are less germane here. However, his broad review of the three major types of methods for studying local political organization -- decisional, reputational, and positional -- and his insistence that the research net be broadly cast to reach a wide range of community influentials is crucial for successful political organization research by the project and the BLM assessment teams. Part of Domhoff's critique of past "classics" in political science and political sociology is that researchers simply stopped tracing the political organization prematurely and failed to identify sufficient political actors and political action. In particular, he chides researchers for focusing too heavily on formal office-holders ("positional power") for failing to trace more removed actors who had no formal role in allocating resources.

Moreover, many of Domhoff's points have also been addressed by other research. Political network analysis has been shown to be quite feasible, and there has even been research done on agricultural community political organization using some of the relatively straightforward new network techniques. For example, Joseph Galaskiewicz (1979) has done research on political networks in "Towertown" (De Kalb, Illinois), and reports on parallel applications of these methods in other research in this report. Some detailed comparisons between findings in this research and some German equivalents have recently been reported by Edward O. Laumann and Peter V. Marsden (1979). This paper provides a useful set of concepts and methods for doing such research and for summarizing the findings. As with Domhoff's work, there is more emphasis on delineating the structure rather than assessing outcomes that are likely from this structure -- but the reported research indicates that these methods are feasible and practical to use, even in larger communities. Their application -- in whatever modified or truncated form -- in smaller western communities should be easier than the initial applications reported above, for New Haven or De Kalb. In summary, there are acceptable and practical approaches currently available which can accomplish much of the research proposed in this synopsis. Such approaches seem suitable for the Social Effects Project field research and, with suitable modification, for routine BLM usage in conjunction with the Regional Coal Teams. For this reason, a summary of the concepts and methods used in social network analysis is presented in some detail.

3.5.2 The Concept of a Social Network

A "social network" is a specific set of linkages among actors in a specified population. Linkages represent ongoing relationships, such as economic and political relationships, where observed and/or reported linkages could include money transactions, political influence, power, and reputation, and the communication of information or the expression of sociopolitical support. The elemental unit in a social network is the dyadic link, the connection between two actors. Dyadic links are aggregated and built up to a complex set of interconnections in a population. Actors, it should be noted, may be persons or organizations; one may study the networks of individuals in a local community, and/or the networks of organizations in a local community.[1]

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[1] The majority of recent network studies of communities have focused on interorganizational networks rather than individuals' networks (e.g., Galaskiewicz, 1979; Laumann et al., 1978; Perrucci and Pilisuk, 1970). These studies survey individuals in organizations as agents of the organizations in order to elicit interorganizational linkages rather than interpersonal linkages. However, the type of actor chosen depends entirely on the research objectives.

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The major assumption of network studies is that the characteristics of linkages taken as a whole can be used to interpret the actions, decisions, and behavior of those involved in the network (see Mitchell, 1969). Thus, this approach focuses on the characteristics of structure, rather than the attributes of actors, to explain the behavior of actors and the outcomes of those behaviors. This does not imply that actors' attributes should be ignored, but it does imply that the actors themselves may not be fully aware of the network structure in which they are enmeshed (indeed, in large or fragmented networks, actors may not even know all other actors) or of how this structure impinges upon decisions and outcomes in the community.

3.5.2.1 Modes of Network Analysis

Network analysis is a cover term for a variety of procedures and techniques used to map the political and economic structure of a given population. These procedures can be classified into two major modes: the relational approach and the positional approach (Burt, 1978). The relational approach focuses on relations between actors, and aggregates actors into subgroups (e.g., cliques, social circles, factions, coalitions, etc.), according to the extent of cohesiveness among actors (Laumann and Marsden, 1979:713-718). That is, this approach identifies the cohesive regions (dense interconnections) in a network. The positional approach focuses on the pattern of relations in which an actor is involved and aggregates actors with similar patterns into "structurally-equivalent" positions, also called "blocks" (White et al., 1976). Two actors would be placed into the same block if the relations they each had to other actors were the same. This implies that occupants of the same block may actually have no links between themselves; rather, they share the same pattern of relations to others (who occupy different blocks).

Network studies of the political-economic structure of local communities have used the relational approach almost exclusively. For reasons that can only be outlined here, the relational approach seems eminently preferable for understanding the political-economic structure of small western communities and assessing the likely outcomes of coal development. First, the identification of subgroups, rather than blocks, is one of the major research objectives. To implement this approach, it is necessary to locate cohesive groups of influentials, delineate lines of communication and influence, and assess the degree of conflict, consensus, integration, and coordination among them. The information from this process could then be used in conjunction with known outcomes of past and current community issues to identify the more-successful and powerful subgroups of influentials. These subgroups would most likely have the greatest impact on the distribution of the benefits and costs of coal development. Since most studies of communities have utilized the relational approach, they constitute a valuable "bank" of methodological, theoretical, and empirical information that can be used as background to the present study.

3.5.2.2 The Relational Approach: Some Techniques

One of the popular techniques for relational analysis is "multi-dimensional scaling" (Kruskal and Wish, 1978). Suppose one had a map of the United States showing the locations of major cities, and had to construct a table of distances between these cities. Using the scale of the map and a ruler, it is relatively simple to measure and tabulate these distances. But suppose one had the reverse problem: constructing a map from a table of distances. Solving this problem is feasible in this example, but, in most applications, the number of objects would be larger and it would not be known in advance that they could be plotted in two-dimensional space. Multi-dimensional scaling (MDS) solves this problem, constructing a spatial configuration of objects, based on information about distances between objects.

This geographical example can be generalized into social network analysis by replacing cities with actors, and distances with social proximities. A social proximity represents the similarity (or dissimilarity) of actors, such that actors who are more-similar (e.g., communicate more) are "closer" in space than those who are less-similar (e.g., communicate less). This points to one of the major assumptions of MDS: social distance can be represented by physical distance (see McFarland and Brown, 1973).

Galaskiewicz (1979) used MDS to study the interorganizational networks of "Towertown" (De Kalb, Illinois). He found that centrality (how close organizations were to the spatial center of the configuration) and proximity (how close organizations were to each other) were strongly related to organizational activation on five community issues and to overall political influence of organizations in the community. Laumann and Marsden (1979) compared "Towertown" with a German equivalent and delineated four theoretical types of network structures (represented by different characteristic spatial configurations) that have different impacts on community decision-making. (Different empirical types would be associated with the four types of potential coal communities classified by Schnaiberg, 1980:8.)

There are two major drawbacks to the use of MDS: first, the interpretation of the spatial configurations is highly subjective; second, other ancillary network statistics must be computed to support the interpretation of the spatial configuration. Other relational techniques do not have similar drawbacks, but neither do they provide a spatial map of network structure. Nevertheless, they generate a great deal of useful information about clustering in the networks, and permit the user to define the criteria for clustering (e.g., inclusion criteria for cliques).

Richard's (1975) clique-detection program classifies actors into several types: clique members (actors who are densely interconnected), liaisons (actors who function as intermediaries), tree members and dyad members (actors with limited connections), and isolates (actors with only one link or no links). Moore (1979) used a similar technique (Alba, 1972) in her study of a political elite network. Her goal was to assess the degree of integration in the network; she found a "central circle" which coordinated and integrated the entire network, facilitating communication among all elites.[1]

3.5.2.3 Some Strategic Considerations

There are numerous technical and operational considerations in designing and conducting a network analysis of a local community; only the broad considerations are outlined here.

System Boundaries -- If all links are traced to their absolute ends, the network would extend far beyond the boundaries of any single community. Thus, it is necessary to decide on the limits to the network and to set network inclusion criteria. There is no accepted way to do this; studies of networks in communities have typically set the geographic community as the arbitrary boundary (see Galaskiewicz, 1979:48).

Identifying the Population -- It is critical that all relevant actors in the system are identified, including those in formal positions of power and informal holders of power. A combination of "positional" and "reputational" techniques is commonly used, where key informants identify the set of influentials in the community. It is very important that the list of influentials that is generated be as exhaustive as possible.

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[1] MDS and these clustering approaches are compatible; ideally, they would be used in conjunction.

Enumeration -- Due to the nature of network analysis, a complete census of influentials is necessary; the validity of the study is threatened if even 5 to 10 percent of the influentials fail to answer the survey. Failure to respond would probably be low, however, for two reasons: first, if convinced of the usefulness of the project, it is in their interest to respond; and second, answering a survey designed for network data usually takes less time than answering a more-conventional survey.

Types of Relations -- Which relations are important to consider? A number of economic and political relationships could be examined, and the types that are important for assessing the impacts of coal development must be determined. Also, the linkages that will represent these relationships must be determined. Galaskiewicz (1969) and Laumann and Marsden (1979) focused on three major links: exchanges of money, exchanges of information relevant to problem-solving, and exchanges of moral support relevant to satisfying legitimacy needs.

3.6 The Issues in Political Negotiations: Illustrations

It would seem inappropriate to end this synopsis without pointing to some illustrations of the substance of political negotiations of coal development's distributional impacts. The comments below are not intended to be exhaustive, therefore, but suggestive.

First, some of the decisions that will be made in the construction phases of the coal projects can be described. Local communities can be impacted differently according to: (1) regional backgrounds of the new labor force, (2) housing arrangements for the new labor force, (3) reorganization of existing land use and traffic patterns during construction phases, (4) notification of impacted residents, and (5) compensation for harmful impacts. All of these are variable and subject to political organizational negotiations between energy corporations and local, state, and federal organizations and their representatives. These include formal and informal negotiations. For example, recruitment advertising can be geared to local or regional media rather than more distant media; housing for temporary labor forces can be of variable quality, in prime or less prime locations, with greater or lesser space and amenities, and greater or lesser access to local institutions and work sites. When impacts are treated as major concerns in political negotiations, many of the reported negative impacts involving isolation of newcomers and/or forced relocation of old residents can be precluded. Land use arrangements likewise are subject to local control or at least influence, even where there are absentee landowners (e.g., by modifying tax scrutiny, exerting peer pressures by other landowners, etc.). Formal notification procedures can be induced for local disruptions, and more powerful compensation review panels can provide greater compensatory justice for local disruptions -- either to individuals or to local organizations.

Turning from the construction to the longer-term phase of coal development, probable impacts of mining and shipping can be identified. These include: (1) employment patterns in mining and shipping, (2) capital formulation for expansion of local business, (3) tax enhancement for provision of local services to newcomers and older residents, (4) political cooperation in responding to economic, social, or cultural disruptions engendered by mining operations, and (5) resource preservation compensation for mine impacts, including provision of recreational alternatives for land and/or water utilization. Actions that are subject to negotiation around (1) include local recruitment for as many positions as there are qualified local residents (including previously underemployed women and minorities) and/or local training programs for marginally qualified individuals. As much as possible, local impacts will be meliorated to the extent that energy corporations pay for such recruitment and training (and upgrading through in-service training). Likewise, with respect to (2), local entrepreneurs can be encouraged to expand their enterprises and recruit local employees to the extent that capital is made available to them for anticipatory expansion. Funds may be set aside for this, and/or energy corporations can be required to use local banking institutions under conditions of loan fund availability to local residents and entrepreneurs, possibly at reduced interest rates. This can prevent external entrepreneurs, including franchise operators, from dominating local commerce after mining operations commence, thereby "leaking" coal-related surplus out of the area, through profit repatriation outside the area, and employment opportunities geared to non-residents.

For items (3) through (5), melioration of negative impacts -- including service needs that exceed available services -- involves cohesive local support for tax or in-kind provisions from energy corporations and/or state/federal agencies to provide wages, capital for buildings and equipment, and the like to compensate for increased needs and/or increased legitimation or perception of past needs. Rising expectations are real and can be made part of the political negotiations if they are dealt with consistently and forcefully enough. Provision of coal mine-community ombudsmen, paid for either by the energy corporation or by matching funds, but preferably representating local institutions, may be an essential component in addressing community fears and harms. Local political organizations can use such interface agents successfully in anticipating problems as well as dealing with problems after the fact. In all of these settings, local public institutions need powerful votes (i.e., not only their own resources but those of community influentials) to offset the tendencies of problems ("negative externalities") being pushed off to community institutions and individuals, and of resources ("positive externalities") being siphoned off by external agents (public and private sector).

All of these negotiations will have greater likelihood of avoiding negative impacts and of garnering positive impacts of coal development if knowledgeable agencies assist local groups in identifying arenas of future need and conflict. While western communities have been sensitized to the "problems" of coal development, the existing literature and folk wisdom is hardly well grounded in predicting local impacts. Results of the Social Effects Project research and review and findings of the Regional Coal Team for selected coal sites' impact profiles should be widely disseminated and explained to community actors and agencies. They would be most helpful if written (or rewritten) in a form that is relatively free of socioeconomic technical language ("jargon"), and presented in as disaggregated a form as possible. While confidentiality of individual political will/power data gathered in political organization impact studies must be guaranteed to provide accurate inputs, the distribution of political will/power data can be communicated to community groups as a means of educating them as to their likely problems and/or solutions (even though this may induce changes in the predicted political organization and negotiated outcomes from the SIA).

3.7 Conclusions

Impact researchers are increasingly being forced to acknowledge the complexities of coal development impacts. Part of this complexity is induced by the de facto (and as yet unstudied) processes of political negotiation which influence the flow of resources from coal development into or away from identifiable community groups and individuals. There are practical methods available for beginning to incorporate analysis of local political organization with respect to such distributional outcomes. Elements of political will and likely political power can be measured -- even if crudely -- and such fields of forces can be used to predict the likely distributions of benefits and costs for sites in which coal is to be mined. This promises to be useful both in the initial selection of tracts by Regional Coal Teams and in the mitigation of impacts in tracts finally selected. Thus, such information is important for internal consumption by BLM decision-makers (and other agencies), with respect to leasing decisions, and for external reporting to "client" communities who will be at risk of increased or decreased welfare distributions through post-leasing mining activity.

REVIEWS

Molotch, Harvey
1976 The city as a growth machine: toward a political economy of growth. American Journal of Sociology 82:309-332.

Summary: This approach focuses on the locality as an areal expression of land-based elites' interests. Such local elite members struggle to maximize the intensity of use, and hence intensity of profits, from units of land. In this effort, they mobilize local political bodies in their service to aid in competition with land-based elites in other localities. Around these two elements of community structure emerges a "growth coalition," including other growth-related institutions and professionals. Thus, growth is less a mechanism to enhance employment and welfare than one maximizing land profitability, in general: data on the lack of linkages of local growth and local welfare substantiate this. Recent antigrowth coalitions stem from ad hoc groupings of professionals and some wealthy individuals whose economic interests are not tied to local land or even its use patterns, but whose quality of life is threatened by intensification of local land use. While primarily prevalent in university towns, there is some spread to retirement areas. If such tentative trends continue, this would alter local political arrangements and would make local business interests subservient to local politics, rather than the reverse, as presently dominates communities. Growth coalitions, as described here, and more fragile antigrowth coalitions are similar to those in many western communities. This work elaborates the stakes, and the distinctions between "community growth" and any particular social welfare distribution, making this a rather more problematic issue than it is in most social impact assessments.

Theoretical Framework: Theories here include social movement and conflict-oriented interest group theories.

Methods: This is an inductive piece, drawing upon materials gathered by other studies, and supported by public data presentations.

Data: The data presented are from official statistics.

Commentary: The importance of this work is that it provides a local as well as a national context for understanding likely impacts of coal development. It encourages more attention to local stratification systems, to understanding the strength of pro- and antigrowth forces, and to predicting the ways in which the stimulus of coal development wages will be mobilized in the various communities. There is likely to be greater variability in smaller towns and rural areas where the "land-based elite" may have greater variability of expectations and preferences for return on land investments preferring to withhold land from some investors. On the other hand, Molotch argues that even the wealthiest urban land-owners eventually succumb to developers, though they may pick and choose the least onerous forms of local land use.

Seiler, Lauren H., and Summers, Gene F.
1979 Corporate involvement in community affairs. The Sociological Quarterly 20:375-386.

Summary: This is a report from the longitudinal analysis of the impacts that the J & L Steel Mill in Hennepin, Illinois had on the surrounding area. Using several data sources ranging from interviews with J & L home office officials to a survey of heads of households, the authors document three strategies the corporate body uses to influence decisions in the Hennepin area: unilateral action by J & L, cooptation, and intervention. Moreover, these activities by the corporation agents were generally unobtrusive, and the authors claim that this resulted in J & L officials being virtually omitted from lists of reputational leaders (influentials).

Theoretical Framework: The theoretical orientation is a variant of the social system approach which attempts to relate extra-local structures and interactions to internal political processes. There is explicit acknowledgement of the dependence of localities on extra-local sources of decision-making. It gives attention to community interactions (issue resolutions) and the consequences of outcomes on perceived influentials (power structure). Because of the similarity of this development project to potential BLM approved projects, it seems particularly appropriate.

Methods: The methodology is longitudinal and involves several data collection methods: purposeful interviews, random surveys of heads of households, participant observation, and several techniques of power structure identification. Clearly appropriate, it is, however, practically impossible for the present BLM project.

Data: The data are available, but it is unlikely that they will be of direct value to this secondary analysis.

Commentary: The major thesis is that absentee-owned corporations have the ability to involve themselves in local community affairs while maintaining an illusion of non-involvement. The data provide strong support. The phenomenon of maintaining an illusion of non-involvement is one not to be ignored in working for the BLM. It means that methods and techniques must be sensitive to impacts which even local citizens may be overlooking. It is doubtful that complete success can be achieved given the constraints of BLM field personnel, but the ways J & L managed the local situation in Hennepin must be noted. Their techniques are quite common in management practices of absentee corporations.

Walton, John
1971 A methodology for the comparative study of power: some conceptual and procedural applications. Social Science Quarterly 52:39-60.

Summary: This is an important contribution to the sociological analysis of power. Its methodology, among other things, may be useful to the research team leaders.

Walton's major thesis is that the problem with virtually every existing study of power is a tendency to be too personalistic. The exclusive unit of analysis is the individual: who holds power, who exercises it, and who gets his/her way. His argument is that to understand the nature of power in communities, we also have to look at organizations, how they are coordinated, which ones are most powerful, and what issues they deal with.

Personalistic and organizational approaches are of course complementary, and it is through both that the best understanding of power ordinarily will emerge. On the other hand, it may be that personalistic models best explain the structure of power in some communities, and organizational models in others. Indeed, this is just what Walton concludes in his comparison of two Latin American cities in the article.

Walton rejects "quick methods" and "new quantitative indices of power concentration based on archival data" (the "positional," "reputational" and "decisional" indices which emerged in the late sixties). Conceptually, Walton states four essential components in the study of power: (1) a specific manageable definition, (2) a statement of dependent and independent variables (what is power being related to in the study), (3) a comparative framework, (4) delineation of the social structural context and authority relationships in which power operates.

Strategically, Walton suggests six data collection procedures: (1) initial interviews of notables expected to be powerful based on standard past research, (2) a second round of interviews of people indicated as powerful in the first round, and a comparison of the two groups, (3) development of a pool of organizations indicated to be important in the first two sets of interviews, (4) analysis of interconnections between top persons and top organizations, (5) identification and case studies of the key events, activities or issues in the topical area under consideration, and (6) classification of important organizations "according to their intermember or systemic character, that is the extent to which they are vertically differentiated and have the capacity for pursuing collective goals."

Walton's definition of power is a slightly modified Weberian one: "the capacity to mobilize resources for the accomplishment of intended effects with recourse to some type of sanctions to encourage compliance." As further subcategories, he notes two traditional Weberian notions: (1) established authority, and (2) constellation of interest as well as (covert) manipulation and (overt) coercion. He further notes the importance of specifying the distribution of power and the degree of equality of power among different actors, and especially the degree to which their exercise of power is coordinated.

The central problem of the empirical work summarized in the paper was the relationship between the arrangement and structure of power and economic development in several Latin American locales. Ultimately one city appeared to have an individual-based distribution of power and the other an organization-based one. By and large, Walton found the organization-based one to be much more successful in its development efforts, though he does not detail in this paper some of the reasons (he does elsewhere).

One important point that he makes about the area with the individual-based power structure is that a reason for the persistence of that power structure was the high turnover in regional and local governments, which evidently thwarted the development of persistent, viable alliances by making it unlikely that relationships developed at any particular time would provide any long term return. Some useful and testable proposition from this point and parallel ones in other papers could be developed, whether it takes the same form as here or not.

Finally, it is worth noting Walton's definition of systemic (organization-based) power. "Operationally, a vertically differentiated unit will be defined as an organization whose constituency and/or member units are other organizations rather than individual persons; that is, an organization that acts on less differentiated groups and is at least once removed from group members. The second characteristic of systemic power involves the capacity to set and pursue collective goals and rests on some principal of legitimacy. Operationally, systemic units are recognized as having authority over lesser units either by law, as in the case of public institutions, or in accordance with organizational rules."

Theoretical Framework: To the extent changes in power structure are to be studied -- a critical variable in energy development -- this framework is probably the most useful -- and usable -- one available. It allows a rich understanding of political power and provides for a wide range of variation in its manifestation.

Methods: The methods used are generally very appropriate, though some specific adjustments would be made in the context of the NGP.

Data: The data necessary to analyze shifts in power (and different original power structures too -- some differences between farming and ranching communities would be expected) should be compiled. But they would not be particularly difficult to gather.

Commentary: Because of its empirical focus on Latin America, this study does not provide any directly applicable hypotheses. Nonetheless, it provides an excellent approach to the problem and a framework for its analysis.

Walton, John
    1976   Community power structure and the retreat from politics:
            full circle after twenty years? Social Problems
            23:292-303.

Summary: Initial community studies by Floyd Hunter (of Atlanta) focused on how social policy was formed in order to open up the power structure to other concerned participants. With the advent of later studies, research questions strayed from the concern with democratic access to social welfare decision-making, and instead described and/or classified communities simply on the basis of measured structures. Research literature concentrated on the measurement and related issues, not on how to gain access to the decision-making structure, in part because the United States political climate of the 1950s and early 1960s emphasized political integration and not political or social class conflict. Only recently have studies returned to the initial research question of how to democratize local power structures by documenting in less abstract ways the mechanisms of inclusion and exclusion of such systems. Presumably the same kinds of research have relevance for western coal communities, since there are prevalent concerns about the non-representation of potential "losers" from coal development, and over-representation of local "winners" who will gain substantially from such economic development. Such research would either document means of gaining access or lay the groundwork for alternative compensatory strategies for losers through federal leasing actions.

Theoretical Framework: This approach incorporates the newer conflict-oriented political theories, including both the American and European versions.

Methods: As this is a synthetic analytic article, there is no primary method here.

Data: There is no primary data collection here.

Commentary: Although Walton's observations apply primarily to aggregates that are larger than most western coal communities, they are perhaps even more forceful with regard to such communities. There is in general a total lack of political structure analysis in such communities, and yet there exists a simultaneous expectation that the local community power structure will be both willing and able to manage some of the local problems of coal development. It is at best problematic that local governments are able to countervail with the large capital and employment power of major coal corporations and the cooperating federal/state agencies. But even if this were the case, it is not clear that such governments are open to participation by those most likely to be relatively or absolutely disadvantaged by coal development, nor is it known how to encourage their enhanced openness.

4. ECONOMIC ORGANIZATION

4.1 Introduction

Practically all information sources -- this literature review, the BLM conference held in Denver, and Western Social Impact Assessments (WSIA's) -- suggest that a better understanding of social implications of the economic effects of mineral development is needed. These "secondary" economic effects encompass changes in the local economy which occur as a result of direct project employment and monetary inputs. Secondary economic effects include changes in the local occupational and industrial structure due both to the direct project employment as well as the induced employment changes in employment patterns, changes in local capital formation and local financial institutions, and other, related changes in the economic organization of the local community.

Most of the focus on the social consequences of economic change resulting from energy development has been on direct project-related employment opportunities, on aggregate income effects (usually measured in terms of average per capita income), on the cost implications of increased demands for housing and consumer goods, and on public finance (including taxes). Relatively little attention has been paid to change in occupational structure, the distribution of direct and induced employment and income effects and the mechanisms by which this distribution occurs, or to the organizational and structural implications of the economic consequences of the energy development. To reveal the social consequences of the change caused by energy development, economic effects must be more broadly defined and more carefully disaggregated.

Changes in economic organization are, of course, simply a part of the general social organizational changes that were discussed in Section 2 of this review. Secondary economic effects are also closely related to changes in political organization (discussed in the preceding section). As described there, political decisions can influence the outcome of a variety of secondary economic effects, such as the number of local residents who get hired directly by a development project, and the degree of equity realized in distribution of economic costs and benefits from development. Since the relation of economic effects to general social organization is discussed in the preceding sections, the remainder of this section concentrates on specification of those aspects of economic change with important social consequences that accompany coal development.

4.2 Employment Related Changes

4.2.1 Occupational and Industrial Structure

In rural western communities, employment of the type associated with energy development is accompanied by changes in the industrial structure of the local economy. Both have implications for the social organization of the community. An important concern, therefore, is to determine the ways in which communities experiencing energy development differ from other communities in the region in terms of employment and occupational structure, and to establish a mechanism for relating forecasts of employment by industrial sector to employment by occupational category. Bureau of Economic Analysis (BEA) employment data show substantial and often dramatic changes in the structure of employment by industrial sector in energy communities. As expected, employment in the mining and construction sectors typically shows great increases. This suggests that there may be an accompanying change in occupational structure, primarily in the direction of increased percentages of blue-collar, skilled workers.

Knowledge of change in occupational structure is particularly important for social assessment. Occupational structure influences many aspects of social behavior and organization in a community; it therefore may provide a mechanism for forecasting major and often irreversible social changes. Occupational structure is socially meaningful for many reasons. An individual's occupation provides a major link between the individual and total society. The way in which individuals procure their livelihood largely determines their income. It predisposes them to certain social behaviors rather than to others, since occupations, or work roles, carry with them social status and norms -- rules for behavior -- and exert influence on workers and their families through the characteristics of the job[1] as well as the lifestyle associated with it. Among the numerous correlates of occupational structure that have implications for social assessment are community mortality and morbidity rates, divorce rates, religious participation, educational achievement of children, and the ratio of children with working mothers -- many of the same indicators used to measure personal and social disorganization.

Significant changes in lifestyles and social organization (differentiation, extra-local linkage, stratification, and integration) in local communities are therefore not likely to occur without a corresponding change in occupational structure; and there are indicators that in many cases, occupational change may be the driving force. Large-scale energy development can substantially change the occupational structure in a community. In the small, rural communities most subject to energy development in the West, this change usually results in an increase in occupational diversity, with new and different occupations created as the local economy becomes more complex.[1] Expansion and diversification increase the potential for occupational mobility -- the movement of individuals into different occupations (up or down in terms of status). The types of changes introduced by energy development can have a marked influence on community life by modifying the occupational structure of the community and influencing the lifestyles and life changes of individual residents.

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[1] Various attributes of occupation have been examined to specify some of the relationships between occupation and socially relevant behaviors and values. Relationships have been established, for example, between degree of job autonomy and child rearing values (Kohn, 1977); type of managerial responsibility (ownership, bureaucratic managership, or non-managerial duties) and child rearing practices (Miller and Swanson, 1958); type of job interaction (i.e., working with people, data, or things) and child value socialization (Banwart, 1979); occupation and health effects; and occupational conditions and degree of political activism (Lipset, 1959).

Changes in occupational structure are also related to changes in the stratification of a community. As discussed in the introduction section, stratification is one of the four fundamental processes of social organization. An understanding of the changes caused in stratification is consequently critical to an analysis of the effect on social organization. It is important, therefore, to determine not only that occupational structure is related to stratification, but that an adequate measure can be developed to establish the nature of this relationship and to quantify the process. A dominant perspective of social stratification is the Weberian concept of prestige status, in which status groups are stratified according to their patterns of consumption as represented by special "styles of life." A measure closely related, although not precisely the same as Weber's prestige status, is that of occupational prestige. Occupational prestige is a summary measure of an individual's or a family's general social standing and is tied to lifestyle through its correlation with education and income. It has been commonly used to measure stratification (Blau-Duncan, 1967). Several characteristics of occupational prestige commend it as a reliable measure:

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[1] This is due to both the direct project employment and the induced employment generated in response to the increased population and income.

1) The rankings of occupational titles are markedly invariant across status dimensions (social standing, honor, intelligence) (Hodge, et al., 1966; Siegal, 1979).

2) The rankings of occupational prestige show no significant variance by age, sex, religion, education, occupation, or region of residence of the raters in cross-sectional samples of the general population in the United States (Reiss, 1961).

3) The overall structure of occupational prestige has remained virtually constant over time, with prestige scores in surveys separated by about forty years correlating at .83 (Duncan, 1968:704-709), making it especially attractive for studies over time.

4) The prestige structure is stable over space. In both western and non-western countries and in developed and developing societies, the prestige attributed to an occupational title is largely invariant across cultures (Hodge, Siegel, and Rossie, 1966; Pineo and Porter, 1970), making occupational prestige a good measure for communities in which the occupational structure may have changed.

5) Approximately 83 percent of the variance in occupational prestige is accounted for by a linear combination of educational and income characteristics of detailed occupational titles (Duncan, 1961:124), indicating that the status associated with an occupational title is in large part a function of certification through formal education and the market value or income of the specific occupation.[1]

6) The test-retest reliability coefficient for respondents' reports of their occupation is .87, compared to .93 for education and .85 for income, (Siegel and Hodge, 1968:37).

Two other measures commonly used as indicators of status and stratification either singly or in combination with occupational prestige are formal educational achievement and income. Correlations among the three indicators of status are moderately high (occupational prestige, formal educational achievement, and income), usually between 0.4 and 0.6, indicating that no more than 60 percent of the variance in any one of the indicators is common with either of the other measures and that each indicator is capturing some unique aspects (Blau and Duncan, 1967). Hodge (1979) supported by Kahl and Davis' factor analysis (1955), has demonstrated that the different indicators of socioeconomic status reveal different patterns of social outcome variables, suggesting that a socioeconomic indicator (or several indicators) rather than a composite, should be selected for use on the basis of relevance to the variables of interest to avoid masking the underlying, theoretically relevant relationships.

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[1] Which when combined with points 3 and 4 indicates extraordinarily stable relative relationships.

Nevertheless, some difficult and unresolved methodological issues are associated with the use of occupational prestige indicators. The handling of the assignment of status to two-worker (or multi-worker) families, and to the individuals within the families, is a currently unresolved issue because it has been shown that the income of each worker has an independent effect, as does the occupational prestige of each worker's position. The handling of part-time versus full-time employment is also problematic, and there is currently no satisfactory or consistent manner to address the methodological problems of multi-worker families. Despite these problems of measurement, change in occupational structure appears to provide one of the best and most powerful conceptual links to forecasting the magnitude and permanence of change in social organization and lifestyles associated with energy development.

Occupational structure has seldom been addressed in the WSIA's. This has been due largely to the lack of a conceptual model which related occupational change to the other important social outcome measures; and to the absence of a well established procedure to convert employment by industrial sector into employment by occupational category.[1] One exception is an article by Murdock and Schriner (1978:426-429). Using data from the Mountain West Research Construction Worker Survey (1975), they compared the occupational and industrial structure of the pre-development, developing, and post-development communities which were included in the survey. These data suggest that both the occupational and industrial structure of developing communities change significantly, but that the changes are not long lasting. Once construction is completed these data showed that the structures readjusted to resemble those of the community prior to development. According to the discussion above, these findings suggest that significant changes in lifestyle probably did not occur in those mineral development communities, except perhaps for a short period during the construction phase.

Generalization of these findings, however, needs to be treated cautiously. The sample of communities in the Mountain West data was limited and the data are over five years old. In addition, the number of proposed coal-energy development activities, particularly those for oil shale and synthetic fuels, will cause substantially higher construction work forces for longer durations, and perhaps more importantly, larger operations work forces with a more technical occupational structure than those represented in the Mountain West data. The increased level and duration of economic-sector and occupational changes of these projects may indeed cause important and long-term consequences for local communities.

Based on this discussion, analysis of occupational and industrial data and the development of an operational model relating industrial sector employment to occupational structure and then to changes in social organization are indicated as clear research priorities. If 1980 census data become available by mid-1981, occupational data for a number of communities for 1960, 1970, and 1980 can be compared. Even if the 1980 data do not become available, it may be possible to estimate the occupational categories of the census data using Bureau of Economic Analysis (BEA) data, which are available on an annual basis through 1979. The USGS project located at the University of Wyoming is in the process of converting to 1970-1978 BEA data to estimates of occupations for all counties in Wyoming. If their effort is successful, the methodology for converting BEA data to occupational data may already be available.

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[1] Particularly critical for an ability to project occupational change from energy development, obviously necessary for the EIS process.

4.2.2 Distribution of Employment

The continuing concerns related to energy development are the factors which influence how many and which local workers will receive employment and what type of employment that will be. Most of the effort in this area, as with examination of occupational change, has focused on direct project employment, frequently with the implication that direct employment constituted the total employment change caused by the project.[1]

Summers et al. (1976) addressed in some detail the distribution of direct project employment between locals and non-locals for general industrial development projects in rural areas of the United States. They noted that a great deal of the policy emphasis on rural development was based on the assumption that workers will be recruited largely from the ranks of local disadvantaged residents -- the unemployed, the poor racial minorities -- alleviating some of the economic distress in rural areas. The studies they reviewed, however, indicate that this was seldom the case. In most of the cases they reviewed, only a small proportion of the new jobs were filled by locals, and even fewer by previously unemployed persons. On the average, the hiring rate for locals appeared to be below 10 percent. The higher skill, higher-wage industrial firms attracted particularly few unemployed or poor individuals who usually lacked the skills necessary for such jobs. Their review showed that even in those areas where rates of unemployment are high, the unemployed may not benefit from the new developments. Summers et al. (1976) found that new employment opportunities created by development are often taken by workers from outside the immediate area who possess more education and better skills and the "right" racial heritage. There are some indications, however, that lack of interest by local residents may be an important factor in these low figures.

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[1] Studies which focus solely on direct project employment may be substantially underestimating the amount of employment received by local residents, and the change in the economic and occupational structure.

In the western energy development areas, the issue of distribution of direct employment effects between locals and non-locals has received much attention, though considerably less data have been collected on previous employment history of workers or on occupational distribution among locals and non-locals. Murdock and Leistritz (1979) summarized the data from a number of surveys with data on the number of local hires both for the construction work force at development projects and for the permanent operating work force. Their summary indicates that the percentage of local workers hired into the construction work force at electric generating stations in the West ranges from a high of about 79 percent for the San Juan Plant in New Mexico to a low of about 3.3 percent for the Wyodak Plant in Wyoming. The authors indicate that the rate of local hire is apparently affected by several factors, including the size of the local labor force before start of construction projects in the general area and other local union practices. Their general finding was that local hiring rates were greater in the more populous states of the West. The average local hiring rate for projects located in Montana, North Dakota, and Wyoming was about 34 percent, while the corresponding rate for projects located in Arizona, Colorado, New Mexico, and Utah averaged about 46 percent.

More recent data on construction hires are available from several monitoring projects being conducted for the utilities at the Laramie River Station by Mountain West Research and Wyoming Research Corporation. Data from the Laramie River Station indicate that for the peak years of construction, the percent of local hires in the construction force was approximately 25 to 30 percent. Thus, the available data indicate considerable discrepancy in terms of direct project employment opportunities for the local residents.

Wieland, Leistritz, and Murdock (1977) report on one of the most comprehensive data bases gathered to date on operations workers. From 1974 to 1976, surveys of permanent workers were conducted at fourteen coal mines and power plants in the Northern Great Plains states of Montana, North Dakota, South Dakota, and Wyoming. Of the respondents, approximately 62 percent were identified as local workers. Again, there was substantial variation in local hire rates among the various projects surveyed. Generally, the local hiring rate was larger for projects located in more populous areas.

In reviewing these data, it must be noted that the employment patterns in the western region could be changing significantly. It is possible that, as development proceeds, locals will be more proficient at acquiring jobs with development projects. As indicated in the "Political Organization" section, local political decisions can often affect the opportunity for locals to be employed on development projects through negotiations with energy companies. And yet, as development in the western region becomes more extensive, especially as synthetic fuel and oil shale development expands,[1] the number of locals available for hire may be rapidly depleted. Therefore, an increasing number of non-local hires may come from ever further distant places, suggesting the possibility of introducing more distinctive and different lifestyles than have been introduced into the region in conjunction with energy development projects. This is an area which warrants attention by the research team.

A major point concerning measurements is raised by this review. Aggregate measures of incidence or prevalence rates can be misleading. As with social disruption measures, caution must be used in interpreting change in either prevalence or incidence rates when the total population upon which these figures are based is changing rapidly. For example, the unemployment rate in an area will fall if a large number of employed persons and few unemployed persons in-migrate, even if there is no change in the employment characteristics of the "local" population. Care must be taken, therefore, to determine conceptually whether the correct measure is the number of persons experiencing economic or social distress, or the rate at which such conditions occur and then to determine the degree of disaggregation necessary to reveal the structure of the change within the population.

4.3 Capital Formation and Local Financial Institutions

A salient question which is seldom, if ever, addressed in WSIA's is how energy developments affect local financing practices. Development creates both a need and an opportunity for new capital formation by creating a need for credit by local businessmen and new customers, especially newcomers to the region.

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[1] As mentioned above, these projects have a substantially higher percentage of jobs in technical and scientific occupations than most previous development activity in the region. The implications of this must be carefully examined.

Capital formation has been a problem that has historically plagued the development of the Great Plains region of the United States (Kranzel, 1955) and is recognized and of concern to local people in the region. This topic is seldom if ever addressed by a social impact analysis.

Although in 1980 capital formation became a public issue at the siting hearings for the permitting of several potential coal mines in the state of Wyoming,[1] the question emerged as a specific request by local communities for assistance in obtaining the capital necessary to finance local development-generated needs, particularly financing for local housing. Suggestions were made that energy companies either process their payrolls through local banks or that they deposit funds in the form of long-term deposits in order to increase the lending capacity of local banking institutions. It appears, however, that this issue has not been resolved either by developers or local financiers, and that there is an unmet need to attract additional capital to the region.

There are two ways in which energy development increases capital requirements. First, local businesses may need additional financing for operating and capital expenditures to enable successful competition with the larger merchandising chains that may be attracted to the area as the population increases. As suggested in the "Political Organization" section, the ability of the local economy to capture potential secondary economic benefits is often determined by the ability of local groups to acquire needed resources to participate effectively in secondary economic opportunities. In this case, if local businesses are able to expand to capture a significant part of new, increased demand created by development, the proceeds from this activity are more likely to be retained in the local community through employment of local residents (as both entrepreneurs and employees), and service to residents of the community is less likely to be adversely affected. The ability of local businesses to respond is likely to affect the institutional structure of the community, in terms of the types of businesses, and will have implications for the degree and nature of extra-local linkages created by the development.

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[1] See especially the transcripts of hearings held before the Wyoming Industrial Siting Council for the Rojo Caballo and South Rawhide Mines to be located in Campbell County, Wyoming.

The second major way to encourage new sources of capital locally is to finance higher levels of consumer purchases. Newcomers to a development area often have an immediate need for financing of consumer goods. In addition, there is evidence that they may be more likely to purchase consumer goods on credit than the indigenous residents of economically marginal rural areas (i.e., the purchase of homes, recreational vehicles, and household appliances such as televisions, refrigerators, dishwashers, and dryers). Local financial institutions, particularly in smaller communities in the West, often do not provide this type of consumer financing. One finding of the Old West Longitudinal Monitoring Study by the University of Wyoming (1977) was that many communities in impact areas in North Dakota did not have a financial institution that would grant housing loans or loans for smaller consumer items such as recreational vehicles and household applicances. In these cases, no institution was available to newcomers or anyone in the area for financing consumer goods.

4.4 The Distribution of Costs and Benefits in Local Communities

One of the serious shortcomings of SIA has been its failure to address meaningfully and coherently the distribution of development related costs and benefits within a community. Numerous authors have discussed various aspects of this problem since the mid-1970s (Piccagli and Thompson, 1977; Conopask and Reynolds, 1978; Sassone, 1978; Schnaiberg, 1975). The distributional question is particularly important for the type of energy development occurring in the region because of the magnitude and duration of the change which often occurs.

Analysis of the distributional effects in an impact assessment should focus on the distribution of basic necessities and inequities in the availability of such necessities (costs versus revenues). The mandate from NEPA and hence for the BLM assessment, is to ensure that development of public goods (minerals) does not result in a lowering of social welfare either for the community in aggregate or for individuals. It is clear from the literature review that no well-developed methodology is available to estimate distributional effects adequately and that this should be a priority topic for the BLM project.

Measurement of economic effects of development has most often been carried out using cost-benefit analysis (CBA). This approach has been criticized by Conopask and Reynolds (1978) and Schnaiberg (1977) because of the non-real assumptions on which CBA is based, because CBA seldom includes more than direct costs of a project, and because intangibles are explicitly excluded from CBA. To date, few efforts have been made to research the distribution of impacts. The studies by Mountain West Research on the social and economic effects of nuclear plants (Branch, 1980; Flynn, 1980; Pijawka, 1980) explicitly address this issue but are only in draft, form and the analytic cross-site comparison which should reveal some of the important factors affecting distribution has not yet been completed. Descriptions of distributional effects of mineral development which may be important are provided in a number of works (Gold, 1974; Cortese and Jones, 1976; Thompson, 1980).

Major problems in addressing the questions of equity and distribution are the establishment of a theoretically and analytically efficient unit of analysis, and identifying data at the appropriate level of disaggregation. One approach to the identification of the appropriate unit of analysis (groups of people) may be to trace the flow of resources through the community, watching for inequities in distribution. Thus, tracing the supply and cost of housing allows one to see how persons with various characteristics (newcomers, retired, Native Americans, professionals, etc.) are able to acquire this resource, under what conditions and for what price, and to identify the factors which influence this distribution. It may also serve to identify both data requirements and possible data sources.

The distribution of economic effects is a consequence of the social and economic organizations of the community. Therefore, development of an approach to adequately address distributional and equity issues requires careful integration with the overall analytic and theoretical approach of the assessment.

REVIEWS

Cose, Ellis

1979 Energy development in the Rocky Mountain West: its effect on women, blacks, hispanics, and the disadvantaged. In United States Commission on Civil Rights, Energy Resource Development: Implications for Women and Minorities in the Intermountain West. Washington, D. C.: United States Government Printing Office, pp. 89-99.

Summary: This article provides an interesting and useful examination of the likely impacts of increased energy production and rising energy costs in the western region on minorities, women, and those on fixed incomes. Looking at these issues on a regional level may not identify specific communities but may provide another picture of what is happening. It is immediately obvious from the data that the region contains relatively few blacks. It is also obvious that the employment of both women and minorities in the energy industries has generally been very low. The high risk, high paying world of energy development, processing, and distribution is a white male bastion. Seventy-nine percent of the workers in oil and gas extraction are white males, as are 79 percent in electric services, 72 percent in gas production and distribution, and 94 percent in coal production. What this means in terms of the overall region is that employment effects on minorities as a group are likely to be minimal. Thus, unless there are significant changes in past patterns, it seems less than likely that increased production of coal in the Rocky Mountain region will have tremendous impacts overall on the employment of minorities and women. However, the effects of rising energy prices will be felt by these more than by most other groups. For example, the poor spend a higher proportion of their incomes on energy than do other groups and so increasing energy costs will hurt them most.

The author concludes that rising energy costs affect consumers and make it harder to pay bills. Such costs can also, in encouraging investment in energy resources, create new employment opportunities. It has been argued that there is an offsetting effect, that the benefits of increased employment more than compensate for the problem of higher prices. However, while this may be true in macroeconomic terms, it is also undeniably true that those who benefit and those who lose are usually not the same. The opening up of opportunities for mining engineers and pipefitters will do little to alleviate the economic woes of the elderly who may no longer be in the work force. It is for that reason that the question of energy costs cannot simply be wrapped up in a theoretical cost-benefit analysis and disposed of on the grounds that the benefits outweigh the costs.

Theoretical Framework: The author draws heavily from economic theory but points out that macroeconomic theory will fail to deal adequately with the critically important equity questions of who wins and who loses with energy development.

Methods: The author summarizes a good deal of data on energy production, employment patterns, consumption rates and costs for different groups, and energy use and employment profiles by race and sex. The data are developed from secondary sources.

Data: A number of summary tables are presented in the article that are descriptive of employment and consumption patterns and trends in the study area.

Commentary: This is an interesting article because of its presentation of the regional overview. This article clearly identifies what will be modest impacts of western energy development on minority groups, at least in areas of employment. (It should be emphasized that native Americans are not treated.) Few employment opportunities are likely to go to minorities or to women unless there are important demographic shifts and conscious efforts on the part of the industry in recruiting much more heavily from these groups.

Geertz, Clifford
1963 Peddlers and Princes: Social Change and Economic Change in Two Indonesian Towns. Chicago: Univ. of Chicago Press.

Summary: This is an analysis of the socioeconomic structure of Modjokuto and Tabanan during the 1952-54 and 1957-58 periods. Both towns are viewed as entering early development stages, though not yet fully developed economically: that is, they are "pretake-off." Whether these efforts will lead to Rostow's "take-off" into sustained development is uncertain, but this analysis treats the social and political bases for future take-off. Modjokuto's Javanese trader class has evolved into a somewhat subdivided set of modernizing entrepreneurs, who are active in transforming commerce as well as political and religious activity and consumption patterns in the town. Their primary economic roles are in organizing local capital and labor into productive enterprise, moving away from older trading roles which dominated their families' histories. In Tabanan, traditional nobility have dominated local export-based industry, using their power to raise capital, but centralizing ultimate corporate control in their hands. These firms have a superficial cooperative form, though, and thus limit popular resistance to the nobility. The differences thus reflect activity organized around purely economic versus more political (M vs. T) ideologies: the first is limited economically by capital constraints, the latter is limited by political sensitivity.

Trajectories of the two towns, as with western coal towns with differing elite structures, are likely to differ substantially. Capacity and will to seize opportunity for local development is likely greater where there is a diffused entrepreneurial base than where there is perhaps a large land-owning traditional ranching family dominating local economies. The latter may have the capacity to raise risk capital, but lack the will; the former may have the will, but have more difficulty in generating capital. This has implications for local versus extra-local control of commerce and profits, employment, and support of local preexisting economic enterprises.

Theoretical Framework: The framework is a critical view of economic modernization theory, which argues for a more differentiated view of social preconditions for and consequences of economic development. This seems more apt than the simpler Rostow "take-off" model.

Methods: The method used is field observation, with two extensive field trips (1952-54 and 1957-58). This provides a texture of socioeconomic organization frequently missing from economic development analyses.

Data: The data are presumably extensive field notes, not easily transferrable.

Commentary: This study seems to be a good example of the need for intensive field observations of communities prior to site selection. Most of the major observations would not occur from published documents, and would arise only from detailed assessment of local socioeconomic structures and leadership. Attitudes toward and responses to coal development are likely to differ substantially according to this leadership, with trader-like leaders likelier to seize opportunities to expand local activity for the benefit of local workers and institutions, retaining a higher share of the coal payrolls in the area for the benefits of existing residents and institutions.

Leathers, Kenneth L.

1977 The Economics of Land Reclamations in the Surface Mining of Coal: A Case Study of the Western Region of the United States. NRED Working paper series #39. Washington, D.C.: U.S. Department of Agriculture.

1980 Costs of Strip-Mining Reclamation In the West. Rural Development Research Report #19. Washington, D.C.: U.S. Department of Agriculture.

Summary: These reports present an overview of reclamation potential and costs in the West. They provide a review of federal and state reclamation legislation; climatic, soil, and other physical conditions affecting reclamation potential; and costs by reclamation phase for Alaska, Arizona, Colorado, Montana, North Dakota, New Mexico, South Dakota, Utah, Washington, and Wyoming. Reclamation costs are presented per acre and per ton. The average reclamation cost per acre for the region was $3,500 or 5¢ per ton. Reclamation costs ranged widely from state to state, however, averaging $3,700 per acre in Alaska, $2,600 per acre in Colorado, $4,700 per acre in Montana, $4,200 per acre in North Dakota, $2,900 per acre in Nex Mexico, $3,000 per acre in Wyoming, and $2,700 per acre in Washington. These reports provide the most up-to-date and most comprehensive cost data on reclamation that are available, and the report is widely known and frequently cited.

Theoretical Framework: A descriptive report with few theoretical implications.

Methods: Methods are based on standard production cost economic techniques.

Data: Data are useful in quantifying the costs of reclamation and as background data.

Commentary: This report is largely of interest to economists but is one with which the sociologist working on an interdisciplinary research team should be familiar. Knowledge of this report is essential for the completion of an informed analysis.

Schnaiberg, Allan
1971 The modernizing impact of urbanization: a causal analysis. Economic Development & Cultural Change 20:80-104.

Summary: Many development programs in urban areas of Third World countries start with the premise that urban populations are modern in attitudes and behavior, and design programs using this premise. This study of Ankara province of Turkey indicates that urban experience of individuals (married women and their families) is only modernizing when such individuals have gained some material benefits of economic development: education, higher income, and a better occupation. Thus, urbanization -- the increased density of population -- changes attitudes and practices only when it is accompanied by changes in the socioeconomic stratification system. Likewise, the modern behavioral changes are produced only in those population groups that experience upward mobility under urbanization's economic development component. In the western coal communities, two sets of inferences seem germane: (1) simple additions of population will not change community lifestyles, unless there is substantial change in the occupational and educational achievements of local groups that is induced by the new coal development, and (2) the differences between older residents and "newcomers" depend less on community of origin than on occupational and related social status similarities and differences: "urban newcomers" may more resemble local residents, depending on status similarities.

Theoretical Framework: This report combines a dual, theoretical model: modernization theory and the elements of stratification theory, linking Third World and U.S. studies.

Methods: The study is based on extensive survey: probability sample of 803 women in Ankara City, and 335 women in four villages in Ankara province (two "accessible" and two "inaccessible" ones, in which all married women were interviewed). Data are available.

Data: Data are specific on some dimensions for the economic and social level of this society and set of communities, though they have some generality as well (e.g., a large subset analyzed in a Chicago study as well: see Armer & Schnaiberg, 1972).

Commentary: While in this, as in other studies of less-developed countries, rural residence is closely tied to low educational and occupational achievement of families, in western U.S. areas there is often much greater parity between rural and urban status levels. Depending on the area, in fact, rural or small town areas may have higher levels of income and education than larger cities nearby, because of the large concentrations of poverty populations in such cities. In general, rural-urban contrasts in populations' educational and occupational levels are far smaller in the U.S.; thus, much less differentiation between older residents and newcomers in western coal communities should be expected. And if coal development work forces are initially different from resident populations, the gap would also be narrowed if local economic development, thus stimulated, created more educational and occupational opportunity for previous residents.

Schulze, Robert O.
 1958 The role of economic dominants in community power structure. American Soiciological Review 23:3-9.

Summary: This article reviews the findings of a study of a community of 20,000 people in the Midwest in the mid-1950s. Its main question was how the political structure of a community would be affected as the activities of its "dominant economic units ... became increasingly directed toward -- and by -- populations and groups other than the local ones." It found that national orientation and ownership of manufacturing and financial firms was accompanied "by the withdrawal of the economic dominants from active and overt participation in the public life of" the city. That withdrawal was relatively dramatic, and interviews indicated an explicit policy on the part of many firms of staying out of local politics, evidently based in part on a fear that no matter what their officers might do, they would make more enemies than friends. In addition, it was noted that the firms, often acting as suppliers to larger firms outside the area, no longer had as large a business interest in the local area as they once had. Further, some firms were concerned that if their management personnel became too involved in local affairs, they might be too hesitant to move to new positions (though it is not at all clear from the article that this latter consideration was very significant).

The consequence of "increasing absorption of the local economic system into the larger industrial complex," especially that of a neighboring metropolis, was that the "overt direction of ... political and civic life ... passed almost wholly into the hands of a group of middle-class business and professional men," none of them in positions of economic dominance. The study also rejects the hypothesis that the economic dominants were manipulating affairs from behind the scenes.

These findings were somewhat inconsistent with those of Floyd Hunter and of Pellegrin and Coates (reviewed separately for this project). Two unverified explanations are suggested at the end of the article. The first is simply that there were significant differences between the South (where the other two studies were done) and the Midwest (where this one was done) and the Northeast (where Rossi came to similar conclusions as this study). This issue deserves attention because it could influence expectations regarding the northern Great Plains and the Rocky Mountain areas.

The second possible explanation has two parallel variants: (1) in the South, economic dominants were coopted into decision structures because they were a major source of donations, and (2) they were drawn in because their presence and high prestige would enhance the prestige of other community leaders. But, as Schulze points out, either way, they would not be expected to exercise power as actively as if they were there for their own purposes.

Theoretical Framework: The theoretical framework of the study is not entirely clear. It is consistent with the vertical and horizontal axis ideas of Roland Warren, as well as with frameworks emphasizing the control of capital or Hunter's framework of community political power. Nonetheless, it provides a good working approximation which is useful precisely because it can be squared with a number of other approaches.

Methods: The methods used cover the gamut of community studies techniques. The general method is logical induction, wherein many sources of information are used and propositions are only accepted if they do not conflict with any of those sources.

Data: The data came from every type of source, including county tax records, city directories and histories, newspapers, records of individual companies, records of the Chamber of Commerce, Poor's Register of Directors and Executives, Polk's Bank Directory, as well as intensive interviews with various kinds of community actors.

The study's operational definition of economic dominants included persons who: (1) occupied the top formal roles in the largest industries and banks in the community, (2) were members of the boards of directors of two or more of those large industries and banks, and (3) were the largest property-owners in the community.

Commentary: The major hypothesis of this study, that top officials of national companies are not likely to be active in community affairs, is critical. Even if the economic dominants do turn out to be active in the NGP, there remain the important questions of: (1) why, and (2) in what ways?

REVIEWS

5. THE EFFECTS OF ENERGY DEVELOPMENT ON POPULATION AND DEMOGRAPHY

5.1 Introduction

The impacts of rapid population growth (and decline) are among the most evident and widely discussed socioeconomic impacts. In fact, rapid population change is to many analysts synonymous with the term "impacts." Data on population change serve as a major input social, public service, fiscal, and other assessment dimensions, and the importance of population projections for the assessment process is widely acknowledged. Despite the recognized significance of population information for impact assessments, however, relatively little attention is given to demographic impacts, other than size effects, such as those that result from changes in population composition and patterns of population distribution that occur during a major energy development. In addition, although population change is one of the most discussed socioeconomic impacts, the actual magnitude of such growth and the accuracy of projections made in assessments is not well documented. Evidence concerning other types of demographic impacts is virtually non-existent.

The discussion here draws heavily from standard demographic literature in addition to literature specifically on population-related socioeconomic impacts. It emphasizes both the demographic impact projection process and the likely effects of major changes in population size, distribution, and composition. Population projections play a major role in determining other dimensions of socioeconomic change. However, change in population size is only one of the major demographic impacts that occur during the energy development process. The review of demographic literature is therefore divided into several major sections:

1) Demographic projection techniques
2) The effects of change in population size
3) The effects of change in population composition
4) The effects of change in patterns of population distribution
5) Research priorities in demographic impact analysis

Rather than provide brief reference to a large number of works with only peripheral significance to the demographic assessment process, this review addresses a more limited number of directly applicable works.

5.2 Demographic Projection Techniques

The process of assessing the demographic impacts of an energy development requires projection of the demographic change that would occur without the development, projection of the demographic change that would occur with the project, and analysis of the differences between the two. The steps involved in this process are discussed in both the general demographic and the demographic impact assessment literature.

Demographic profiling, a necessary precursor to much assessment work, is discussed in Murdock and Leistritz (1979), Chalmers and Anderson (1977), Denver Research Institute (1979), and others. Such profiles generally include data on the following:

1) Population change for several recent decades
2) Changes in key demographic processes such as:
   - births
   - deaths
   - natural increase
   - net migration

3) Patterns and trends in population characteristics
    - -- age (median age) and cohort components
    - -- sex composition
    - -- racial-ethnic mix
    - -- family and household composition
    - -- marital status
    - -- average family size

4) Patterns and trends in factors closely associated with demographic characteristics
    - -- educational levels
    - -- occupation and industry employment characteristics
    - -- individual and family income levels

5) Patterns and trends in population distribution
    - -- density
    - -- rural farm, rural nonfarm, and urban residence
    - -- metropolitan and nonmetropolitan residence
    - -- population by size of place
    - -- distance between impact area communities and larger urban centers

The significance of these and similar factors for social phenomena are clearly described in a number of standard demographic references including Bogue (1969), Petersen (1975), Matras (1977), Smith and Ziph (1976). The work by Matras is especially helpful because of its sociological emphasis.

The baseline projection process requires the completion of a standard demographic projection and thus requires knowledge of the methods and assumptions used in such projections. A number of general demographic methods books are useful. The most comprehensive and complete reference is that by Shryock and Siegel (1973) which presents not only a comprehensive description of alternative estimation and projection techniques (chapters 23-25) but also clearly points out the implications of alternative assumptions regarding key population parameters. In addition, these authors emphasize several general principles of population projection. These include the fact that population projections are only as accurate as the accuracy of the assumptions on which they are based and are generally more accurate if performed:

1) For an entire nation or large geographic region rather than for a small component area or subregion;
2) For total populations rather than for subpopulations or population subgroups;
3) With series using data directly related to population change (births, deaths, and migration data) rather than using data that provide indirect or symptomatic indicators of population change (automobile registration, housing counts, etc.);
4) For shorter rather than longer periods of time;
5) For areas in which past trends are more likely to continue than new patterns to arise; and
6) For areas undergoing slow rather than rapid change.

These conditions are generally not met in areas for which impact assessments are performed -- particularly in the West.

Several references are available that provide less complete discussion than that in Shryock and Siegel. Among these, perhaps the best overview is provided by Pittenger (1976). He describes in detail each of the major methods of population projection and provides information at a variety of levels from the very general to the specific. Among the most concise descriptions of projection methods are those by Morrison (1971) on population estimates and Irwin (1977) on projection techniques. Irwin, in particular, provides an excellent, brief description of each of the major projection techniques including: (1) extrapolative, curvefitting, and regression-based techniques; (2) ratio-based techniques; (3) land use techniques; (4) economic-based techniques; and (5) cohort component techniques. In addition, he provides step-by-step procedures for completing the cohort component technique, the most widely used demographic projection procedure. A forthcoming work by Leistritz and Murdock (1981) provides an overview of each of the five methods noted by Irwin and discusses their advantages and disadvantages in relation to the demographic assessment process.

Recently there has been an increased use of combinations of economic-based and cohort component techniques in impact assessments and a decreased use of the population to employment ratios that dominated earlier impact projections. Most economic-based techniques employ standard economic projection methods (such as export base or input/output) to project labor requirements, and a cohort survival method in conjunction with a set of projected labor force participation rates to project labor availability. Labor requirements and availability are matched to derive projections of in- or out-migrating labor, which are converted to population projections through application of a set of assumed population characteristics (average family size, age, marital status, etc.).

Lucid discussions of the demographic projection process are presented in several manuals, including those by Mountain West Research (1979), Denver Research Institute (1979), Murphy and Williams Consultants (1978), and Chalmers and Anderson (1977), as well as in the forthcoming book by Leistritz and Murdock (1981). These works point out that the demographic impact assessment process generally requires projection of both baseline and impact population levels in which not only the total magnitude and characteristics of that population change are estimated, but also its distribution and characteristics at the community level.

This means that assumptions concerning each of the impact dimensions must be added to the standard (and often unsubstantiated) assumptions about demographic processes that are required for population projections. This necessitates knowledge or estimation of the numerous factors that can affect demographic change in the local area including, for example:

1) Determination of project-related direct and indirect in-migrating workers, including consideration of:
   - -- characteristics of required employment,
   - -- characteristics of available labor (unemployment, underemployment, skill levels and commuting patterns),
   - -- indirect/direct worker ratios, and
   - -- local/nonlocal worker ratios;

2) Projection of the residential distribution (settlement patterns) of in-migrating workers; and

3) Determination of the demographic characteristics of in-migrating workers and their dependents to establish project-related population impacts by site.

Important works related to each of these dimensions are available and require brief discussion.

The need to differentiate between the characteristics of available and required labor has become increasingly recognized. Too often, demographic assessments using economic-based techniques have assumed a uniformity in types of labor demands and availability. Local availability for less skilled occupations is likely to be much higher than for highly skilled jobs. Increasingly it is concluded that a multi-projection procedure using different employment categories is essential (Malhotra, 1979).

The issues surrounding indirect to direct worker ratios or multipliers and local hiring rates are among the most widely researched in the field. A large number of labor force surveys have been completed in energy areas, and an increasing number of multiple-site analyses address both the indirect/direct and local/nonlocal ratio estimation problem.

Among the labor force surveys providing information on local/nonlocal ratios, the most useful appear to be those by Mountain West (1975,1977,1979) and Wieland et al. (1977,1979). Each of these presents data on work force characteristics (including local/nonlocal ratios) from multiple sites. The Mountain West works cover construction workers while the Wieland works provide data on both construction and operational workers. These studies show that local employment levels range widely as discussed later and are clearly subject to both local conditions and project characteristics in relationships that remain only partially understood. An additional, and serious shortcoming is the fact that almost all available data pertain only to direct project workers and do not include the indirect workers who are likely to have a very different (and higher) local/nonlocal ratio.

The second source of information on both local/nonlocal ratios and indirect/direct worker ratios appears in several studies that attempt to provide generalizations from multiple areas. Such efforts include those by Anderson (1979), Thompson et al. (1978), Denver Research Institute (1979), Murdock and Leistritz (1979), and Murphy and Williams (1978). These reaffirm the variability of local/nonlocal ratios noted above and show indirect-to-direct worker ratios in the one-to-two range. Of particular importance is the finding by Anderson that these ratios show a distinct pattern when examined by size of place in which the development occurs, with generally higher ratios in larger places. Of the many aspects of the demographic projection process, the local/nonlocal and indirect/direct worker ratios are among the most extensively documented.

The second major step -- the determination of the distribution of impact workers and population -- has received attention in a variety of works. Prevailing methods tend to use either various judgmental weighting models, in which communities are differentially weighted on some criteria and in-migrating population distributed on the basis of relative weights, or gravity allocation models. Although the validity of distributional models has yet to be fully assessed, analyses by Chalmers et al., (1978) and Murdock et al., (1978) suggest that standard models, such as gravity models, are likely to be less valid in rural impacted areas than in more urbanized areas of the country. A useful listing of the uses of such models in non-impact situations is provided by Carrothers (1956).

The final stage of the assessment process -- the determination of the demographic implications of a given level of in-migrating labor -- is an important topic of discussion in nearly every assessment manual and report. Among the critical aspects of this part of the assessment process is the need to use characteristics that are specific to given types of workers and projects. Thus, numerous survey efforts (Mountain West, 1975, 1977, 1979; Wieland et al., 1977) point out that the average number of dependents accompanying construction workers is likely to be relatively small because many will not bring their families to the impact area and because of their young age structure. Short term projects appear to have especially few workers accompanied by their families. For operational workers, the number of dependents is likely to be larger than for construction workers, but because of the young age structure, smaller than for longtime residents. Thus, projections that assume that new families will have the same characteristics as existing residents should be avoided, and analyses are increasingly relying on data from labor force surveys for projecting new worker-related populations.

Finally, in relation to the demographic projection process, several works suggest that the most advantageous use of demographic projections may be to sensitize decision-makers to the likely range of impacts that may occur under different conditions. Both the general demographic literature (Shryock and Siegel, 1973) and the demographic impact projection literature suggest that multiple sets of projections should be made to bracket the likely magnitude of change. In addition, these sources suggest that the magnitude of error in such projections will not be known until systematic evaluations, such as those likely to occur after 1980 census data become available, have been made.

A substantial body of literature is also developing in relation to the use of computerized projection models. Generally referred to as economic-demographic projection models, these include the REAP Model (Hertsgaard et al., 1978), the BOOM 1 Model (Ford, 1976), the BREAM Model (Mountain West, 1978; 1980), the TAMS Model (Murdock et al., 1979a), and others. These models are receiving increased use because of the rapidity with which projections can be provided and the ease with which parameters can be changed to develop alternative scenarios. Murdock and Leistritz (1980) provide a comparison of twelve such models on the basis of their methodological, informational, and use characteristics. It is evident from a review of this literature that such models wil play an increasingly important role in impact projections.

Overall, then, demographic literature from a variety of sources suggests that demographic projections must be made with full recognition of the limitations and assumptions underlying them. When the uncertainties of impact conditions are added to those already evidenced in any demographic projection process, special care is warranted. In making, using, or evaluating the demographic impact projection process, then it is critical to have a general working knowledge of the procedures used in and the key assumptions underlying the assessment process.

5.3 Impacts of Changes in Population Size

Information on the magnitude of population increases likely to accompany a major energy development, on the accuracy of impact projections for western energy areas, and on the implications of alternative levels of population growth in impact areas is limited. Although impact population projections are a part of every impact assessment, evaluation of the accuracy of such assessments are nearly nonexistent. Existing impact literature, however, does provide some general guidance and the general demographic literature provides some insight into the effects of population size and growth.

The level of growth that can be successfully managed by local governments is a topic of much concern. Although the rates that can be successfully managed will vary from one area to another, Gilmore and Duff (1975) and Gilmore et al., (1976) note that rates of growth between

5 and 10 percent annually are difficult to manage, while rates exceeding 10 percent lead to near boom town conditions. Beal (1974) makes similar conclusions concerning rural areas in general, but notes that the actual levels that are disruptive are highly variable from one situation to another. Such rates of growth, however, do not occur frequently in impact areas. In one of the few evaluations of population growth in western impact communities, Murdock et al., (1980) note that rates of growth exceeding 10 percent (boom town rates of growth) are more the exception than the rule. Of the thirty-three impacted (project-sites) communities examined in their analysis, only nine had rates of growth exceeding ten percent, and their was little evidence of rapid general area (country-wide) growth. These authors conclude that, in fact, most energy developments appear to have resulted in the stabilization of local populations rather than in excessive growth. Beyond such sparse evidence, there is little information on the likely range of growth that may be expected in an impact situation.

Evidence on the likely accuracy of impact projections is even more limited, but available literature on the accuracy of population estimates and projections in general suggests that any projection should be used with caution. Thus, assessments by Shryock and Siegel (1973), by Ascher (1978), and by Morrison (1971) suggest that no superior methods for population estimation and projection are available. Particularly startling is the evidence from a recent evaluation of the accuracy of the Census Bureau's population estimates by Zitter and Cavanaugh (1980). These estimates are for short periods of time after the last census and utlize extensive symptomatic data from tax returns and similar sources. When these estimates were compared to information from special censuses, the authors reported that at the state level, average errors were less than 2 percent and only 5 percent at the county level. The accuracy of estimates decreased rapidly, however, as the population size of the area decreased, such that the average error of estimate for places of less than 1,000 was 12 percent and for areas with less than 500 persons, the average error exceeded 23 percent. Although systematic evaluations for impact areas have not yet been made, such information suggests that impact projections are likely to show substantial errors.

5.4 Effects of Change in Population Size

Data on the actual impacts of changes in population size and rates of growth in impacted areas are limited, but the general demographic literature again provides some insight into the likely implications of such change. Basic works describing the effects of change in population size include those by Bogue (1969), Petersen (1975), Matras (1977), and others. Matras' work, in particular, points to a large number of economic, political, and social consequences of population size and growth.

In general, Matras' work points to a much wider range of consequences of population size and growth than is evident in most of the assessment literature. Whereas larger populations and population growth require extensive increases in service requirements and expenditures as noted by Gilmore et al., (1976), and contribute to some increase in levels of social disorganization as noted by Bold (1974), as well as to changes in the level of formality and community perceptions as noted by Freudenberg (1980), other possible effects noted by Matras are seldom discussed. Matras, for example, points to the following as likely social, political, and economic consequences of population growth:

1) Increased organizational size
2) Increased levels of social disorganization
3) Increased organizational "openness" to change
4) Increased levels of innovation
5) Increased division of labor and specialization
6) Decreased concentration of power

7) Increased levels of employment
8) Decreased levels of unemployment
9) Increased levels of investment
10) Decreased levels of savings
11) Increased economies of scale in production and service provision
12) Increased occupational mobility
13) Increased formality in interaction patterns
14) Decreased levels of social inequality
15) Increased demands on services
16) Increased formalization of service delivery systems

Two general conclusions emerge from Matras' work. First, it is clear, as noted earlier, that the social impact literature has tended to concentrate on only a few of the likely concomitants of population growth (such as items 2, 13, 15, and 16) and to ignore others. Second, despite the wide range of effects that are associated with population increase, sociologists conducting impact assessment have chosen to recognize those that are principally negative. This negativity suggests a selective bias in the social assessment literature. A more inclusive and widely informed perspective is suggested from an intensive review of the demographic literature.

Overall, then, the literature on population size and growth suggests that neither the accuracy of demographic projections nor the levels of growth actually accompanying energy development have been adequately assessed. The need for such analyses is thus evident. In addition, however, one must conclude that a wide range of both negative and positive impacts may result from population growth and that a more balanced view that emphasizes the entire range of impacts may be appropriate in the social assessment process.

5.5 Effects of Change in Population Composition

Establishing the changes in population composition that will accompany an energy development and tracing the implications of such changes is extremely difficult. Beyond general references, this topic is given little attention in the impact literature, and even the general demographic literature establishes only tentative linkages between demographic characteristics and social and economic phenomena. In this section, both the question of what changes are likely to occur in the composition of the population of an impacted area, as revealed in the impact and general demographic literature, and the implications of such impacts as noted in the general demographic literature are discussed.

The general changes likely to occur in the composition of an impacted area's population will result largely from the characteristics of in-migrating workers and their families in relation to those of the impacted area's population. The larger the number of such in-migrants, the smaller the baseline population; and the more divergent the characteristics of in-migrants are from the characteristics of baseline residents, the greater the change in the overall population composition of the area. The characteristics of energy-related migrants are becoming evident from a number of studies. The extensive worker surveys by Mountain West (1975, 1977, 1979), Wieland et al., (1977, 1979), and analyses by Murdock et al., (1980, 1980) clearly establish that such migrants tend to be young adults with a relatively small number of dependents, to be relatively highly educated, and to have a different occupational structure than local residents, and to have higher levels of income. They are quite different than the indigenous residents of the area but are like migrants in general.

The analyses of Murdock et al. (1980), for example, showed that: (1) whereas the average age of long-time residents was forty-six, that of migrants was thirty-one; (2) although only 29 percent of long-time residents had more than a high school education, over 50 percent of migrants had more than a high school education; and (3) only 28 percent of long-time residents but nearly 50 percent migrants were skilled craftsmen. Finally, their findings indicated that, in the particular sample examined, such differences would have resulted in a decrease of nearly nine years in the average age and an increase of nearly 14 percent in the number of persons with more than a high school education in the total composition of the sample population. Although such a magnitude of change is unlikely to occur in the total population of an impacted community, the data indicate that the magnitude of differences between migrants and long-time residents may be substantial. Changes of a somewhat different nature may be expected if large-scale development of synthetic fuel production is undertaken in the western region, as the operations workers for these production facilities have significantly higher skill and income characteristics than most ongoing economic activity in the area.

The similarity of energy migrants to migrant populations in general has not been adequately examined except in a few works (Larson, 1977; Murdock et al., 1980), but clearly the general migration literature may be of considerable utility for establishing the likely characteristics of energy migrants. In this regard, several summary works, particularly those by Ritchey (1976), Shaw (1975), and Greenwood (1975), are of considerable utility.

Ritchey's work provides an excellent overview of the theories and likely motivations for migration. As such, its use, in an impact context, provides one with a clearer understanding of the overall societal factors affecting migration. More importantly, his synopses clearly reinforce the finding that energy migrants' characteristics are those of migrants in general. As a result, his work provides a basis for suggesting that the impacts of energy migrants are also likely to be similar to those of migrants in general.

The general demographic literature suggests that a wide range of possible impacts may result from extensive in-migration and its implications for change in population composition. Examining the implications of just four such compositional changes -- those in age, levels of education, income, and occupational distribution -- as delineated by Ritchey (1976), Shaw (1975), Matras (1977), and others will suggest the need for the impact analyst to become more familiar with the literature on demographic composition, migration, and social change.

Changes in the age structure of a population can affect a wide variety of economic, political, and social factors. As a whole, the demographic literature indicates that younger populations are more innovative, more open to change and tolerant of radical change, and hence less tied to tradition (Matras, 1976). They are more likely to invest in long-term community development and more likely to purchase consumer-oriented goods (Greenwood, 1975). Younger populations are likely to change residence and employment more often than older populations and to seek a wider range of economic opportunities (Easterlin et al., 1978). This literature overall suggests that, in fact, any area receiving a significant number of migrants is likely to experience a fluid, rapidly-changing way of life. These effects occur no matter what the reasons for the in-migration.

Increased levels of education and income are, of course, well documented sources of social change. Yet, the general demographic literature cited above clearly establishes that major shifts in such factors for a total population may result in significant increases in the rate at which change takes place. Thus, the wealth of literature on the effects of demographic change on economic development (United Nations, 1973) establishes that when a given magnitude is reached, the interactive effects of income and educational changes are likely to lead to differentiation, extensive pressures for innovation, alternative decision-making structures, and change in the stratification and integrative processes in the community.

Changes in occupational patterns, the division of labor, and occupational mobility are also well established concomitants of changes in demographic composition (Matras, 1977). In addition, some work in the assessment literature such as that by Murdock and Schriner (1978), suggest that occupational mobility has, in fact, occurred because of overall shifts in compositional patterns in impacted areas.

Finally, the demographic literature suggests that, to the extent that such characteristics are concentrated in a single group (or cohort), the overall changes may be particularly noticeable. As a result, changes in population composition may be confused with changes in the basic social structure of an area such that temporary changes may be mistaken for long-term patterns of change. The work by Ryder (1965) provides an excellent discussion of the effects of changes in population composition on short-term and long-term social patterns. In particular, Ryder points out that, in any social structure, a large proportion of young adults (such as young migrants), will lead to disruptions in existing social patterns, changes in social expectations, and social demands. He also points out, however, that, as this group ages and gains an investment in the existing social structure, it assimilates to it. The end result is a structure not radically different from that which existed prior to the cohort's arrival. To the extent that energy impacts are migrant-determined impacts and represent a one-time change in population composition, such literature may have clear implications for impacted areas.

Although specific analysis of the impacts of changes in population composition on western energy impacted areas is limited, available impact literature and general demographic literature related to the topic suggest factors of significance for social assessments. First, this literature clearly suggests that significant changes in population composition may occur in impacted areas. Second, it establishes that such changes result largely from the effects of in-migration. Third, it demonstrates that such inmigrants are like migrants in general and are likely to have impacts typical of them. On the basis of these factors, the general demographic literature suggests a fourth factor, that, as with changes in population size, changes in population composition are likely to include a much wider and more pervasive range of effects on overall social organization than those most often discussed in the social impact literature. Fifth, and finally, this literature suggests that temporary changes in population composition may sometimes be confused with long-term changes in local social structures in impacted areas. Overall, then, this literature suggests that, although some work is appearing (see Baldwin and Poitsch, 1977), there is considerable need for a greater understanding of the implications of changes in population composition among social impact analysts.

5.6 The Impacts of Changes in Population Distribution

Population distribution plays a major role both in the determination of socioeconomic impacts and as a response to such impacts. Literature discussing the general effects of prevailing patterns of distribution for impact determination include works by Gilmore et al. (1976), Murdock and Leistritz (1979), Weiland et al., (1979), Malhotra (1979), Krannich (1978), and several others. In general, these works have concentrated on the effects of distance from large metropolitan areas and commuting patterns as they affect in-migrating workers' settlement patterns. Emphases have been on the prediction and description of factors affecting settlement choices.

A review of these references and analyses suggests that close proximity to a large metropolitan area will reduce the magnitude of population in an impact area (Krannich, 1978), that commuting distances of more than fifty miles are relatively unusual (Murdock and Leistritz, 1979), and that higher levels of community service infrastructure development do affect patterns of settlement (Weiland et al., 1979), Murdock et al., 1980). In addition, they point out that communities of less than 1,000 are much less likely to grow substantially as a result of energy developments than larger communities, and that growth tends to be concentrated in specific communities rather than to occur region-wide. Additional work by Stenehjem and Metzger (1976) suggests that housing availability may be the key determinant in settlement choices. Beyond such generalities, however, there is little information concerning the effects of such factors as relative levels of density and other distributional factors on settlement patterns. Overall, the findings related to factors affecting settlement patterns of project-related populations tend to support those propositions evident in regional economic theory, especially that related to central place theory (Chalmers et al., 1978). A more concerted analysis of such literature should be undertaken.

The impacts of actual migrant settlement patterns on impacted areas are less well established. These are strong indications, however, that the concentration of impacts is a major determinant of the nature of their effects on local areas (Gilmore et al., 1976; Krannich, 1978; Leistritz and Murdock, 1981). All available evidence indicates that the distribution of the impact population is especially problematic when it does not coincide with fiscal and other jurisdictional boundaries. Beyond such effects, however, several additional types of impacts, described in the general demographic literature but largely ignored in the impact literature, require brief consideration as possible long-term implications of changes in population distribution.

Thus, several large bodies of literature suggest the significance of changes in population distribution for areal patterns of dominance. Berry and Horton (1970), Berry and Kasarda (1977), and Hawley (1971) provide excellent descriptions of such effects for urban areas while Hassinger (1978) and Johansen and Fuguitt (1979) provide recent discussions of long established rural literature on such topics (Duncan and Reiss, 1956; Hathaway et al., 1968). To the extent that changes in population distribution in impact areas change patterns of dominance between local communities, this literature suggests that:

1) Newly dominant communities will gain a disproportionate share of the positive economic impacts of the resource development (Hassinger, 1978).

2) Newly dominant communities will be able to obtain a larger proportion of future population growth (Johansen and Fuguitt, 1979).

3) Newly dominant communities will show greater diversification in their economies over time and will be more resilient in adapting to new problems and opportunities.

If impact growth changes relative patterns of dominance, these works point out that the long-term effects for areas in the impacted region may be extensive.

The distribution of impact population may also have several more subtle effects on local areas. Dispersed patterns of distribution across numerous communities may lead to patterns of change that, though more easily managed at each site, are insufficient to provide significant levels of desired growth in any given community (Murdock and Leistritz, 1979). Wide disparities in the patterns of distribution for construction and operational populations may lead to problems in the distribution of long-term service needs (Gilmore et al., 1978). Finally, impact populations may show widely different patterns of population distribution depending on the characteristics of the in-migrants. Such factors may lead to community patterns of growth that are similar to the differences between central city and suburban growth with some areas receiving migrants with higher socioeconomic status than others (Murdock et al., 1980).

Overall, the literature on the distributional aspects of impact-related growth suggests that its determination is critical for impact projections and planning and that evidence is accumulating rapidly concerning actual settlement patterns in impacted areas. In addition, studies of the factors affecting such distribution are occurring with increasing frequency. The long-term implications of energy-related patterns of population distribution, however, require more concerted attention. In sum, then, the distribution of population is the major determinant of the distribution of impacts, and social analysts seeking to understand social impacts should give concerted attention to the analysis of population distribution.

5.7 Research Priorities in Demographic Impact Analysis

A review of the literature on the demographic assessment process and on the socioeconomic impacts of changes in population size, distribution, and composition point to several research questions requiring additional analysis with secondary and primary data. Additional research in these areas is necessary for the general improvement of the state of knowledge concerning social impacts and thus are essential for the BLM social assessment effort as well.

One of the clear research needs is the need to assess the general accuracy of demographic impact projections and the utility of alternative projection methods. Although specific methods (economic-based) have been favored because of their conceptual elegance, there is simply no evidence on the accuracy of such projections in general or on the accuracy of specific methods. Which methods are superior, under specific sets of circumstances, is simply unknown. With the recent release of preliminary census data and the wide availability of impact projections for 1980, such an analysis should be relatively straightforward. Its completion would clearly increase the capability of researchers to recommend specific methods and to more accurately describe patterns of growth in particular contexts.

Another area of research that should receive attention is the analysis of the factors accompanying various levels and rates of growth. The prevailing levels of growth accepted as indicative of "boom town" conditions (such as 10 percent) are largely speculative. Given the increasing availability of 1980 census data and the baseline data collection efforts entailed in the Mountain West (1975) community surveys for Old West and the Thompson et al. (1978) monitoring effort, a limited effort should be possible. If the level of growth likely to lead to growth management problems could be established or even the validity of existing assumptions tested, the effort would be of considerable utility.

Closely related to the first two research issues is the need to analyze what types of communities grow in what types of contexts. Again, secondary data analyses seem appropriate. Many areas of the West have grown for reasons other than energy development. By comparing sociodemographic changes in these areas to those occurring in energy impacted communities, the unique effects (if any) of energy development should be obvious. Such information is clearly important for establishing the validity of many present assumptions about the unique effects of energy development.

Despite the relative availability of such information, additional research is also required to establish the actual characteristics of in-migrants to energy development areas, particularly those migrants that have arrived to take indirect jobs in the service sectors of local areas. Primary data collection involving a small sample would allow the validity of present generalizations to be assessed.

Yet another research issue requiring attention is that related to the likely long-term effects of energy migrants on existing populations' composition over time. Such analysis would consist largely of a simulation of trends and patterns over time and could be done with existing models such as Mountain West's BREAM Model, the REAP Model, the TAMS Model, or several others. By a thorough examination of the likely implications of various population structures for various demographic phenomena (levels of births, deaths, etc.), for service needs, and for social phenomena, considerable insight into the long-term demographic impacts of energy developments should be gained.

In the area of population distribution, research is clearly required on the reasons underlying the choice of settlement locations. Housing availability, service infrastructure, and similar factors are assumed to determine settlement choices, yet definitive information is limited. Although the examination of such a research issue would require a primary data collection effort, even a limited sample using an informal question format would provide information beyond that presently available.

Additional and related questions that should be examined, if only impressionistically, are those related to the relative changes that occur in the perceptions of residents in communities undergoing various levels of growth and those concerning the shifts in the relative dominance of impact area communities. To what extent has the initiative on non-energy development issues shifted toward communities undergoing more rapid growth? How do the perspectives toward change and innovation of residents in rapidly growing areas compare to those for residents in declining or stable areas? The answers to such questions are basic to any social analysis and represent a logical extension of similar efforts by Thompson et al., (1978).

Finally, among the many other research questions that should be addressed is the need to more thoroughly investigate the premise that energy-related population changes and their impacts may be relatively short-lived and result in social changes not unlike those occurring under any condition of rapid growth. Although the definitive answer to such an issue can only be provided by a long-term monitoring effort, and the simulation analyses described earlier would partially address the issues involved, the issue seems significant enough to merit a more concerted effort. Thus, if the impacts of western energy development are limited to those generally associated with rapid growth and are relatively nonunique, then much of the general literature on the effects of population growth may be directly applicable to western energy development and many of the key issues already adequately addressed. In addition, if such changes are not unique to energy developments, then energy developments, and perhaps their sponsoring agencies, should not be subjected to unique legislation or other requirements. Few would suggest that general growth-related changes should be a subject of major assessment efforts. The potential significance of this premise, both for social impact analysts and developing agencies, is evident. As a first step toward addressing this issue, a thorough delineation of energy-related socioeconomic impacts and general population change-related impacts could be made. This "library" research effort could provide considerable insight into the extent to which general population processes underlie the specific social issues related to western energy development.

Overall, then, a review of the demographic literature pertinent to energy development suggests a variety of research issues requiring further examination. Even without definitive answers to these research questions, however, available literature points out that the demographic impacts of a major development are much more extensive than often believed and that a clear understanding of them is an essential aspect of a social assessment. Finally, the literature suggests that demographic impacts and demographic changes may be inclusive of many of the impacts often believed to be uniquely social in origin.

REVIEWS

Ascher, William
1978 Forecasting: An Appraisal for Policy-Makers and Planners. Baltimore, Maryland: Johns Hopkins Press.

Summary: This book provides a comprehensive overview of the conceptual and empirical issues involved in forecasting in a wide variety of social and hard science areas. It provides a chapter on several substantive areas. Those of particular relevance to social scientists are on population and economic, social, and energy forecasting. The author provides a description of forecasting techniques, a historical overview of forecasting, and an evaluation of the accuracy of projections made in each substantive area over the last several decades. In general, the book concludes that attempts to project economic, demographic, social, and other futures have failed and that the projection process should be used largely as a sensitizing process for informing decision-makers of the logical consequences of their actions. The book serves to caution the reader to question the accuracy of scientific prediction.

Theoretical Framework: No particular framework is evident.

Methods: Methodologies employed appear adequate.

Data: No original data are presented. Secondary data are utilized.

Commentary: This book is useful for the experienced researcher. However, it should receive rather low priority, as a basic reference.

Lonsdale, Richard E., and Seyler, H.L., eds.
1979 Nonmetropolitan Industrialization. Washington D.C.: V.H. Winston & Sons, Inc.

Summary: This book provides a useful counterpart to and updating of Summers' Industrial Invasion of Nonmetropolitan America. It overviews the magnitude, characteristics, and impacts of nonmetropolitan industrial growth across the United States. It is extremely useful in providing the readers with a broader understanding of the context of particular types of industrial growth, such as energy development. In addition to providing data on the total level of industrial growth in the United States, it analyzes such topics as: the filter-down theory of industrial benefits, the levels of secondary economic growth experienced in industrializing rural areas, the effects of industrial growth on migration in rural areas, and the effects of industrialization on secondary employment and income. A particularly valuable article by Ron Shaffer overviews evidence for a majority of the economic benefits claimed for the rural industrialization process. In general, the work provides little indication that industry has served as either a boon or a detriment to rural communities.

Theoretical Framework: The book provides a broad overview of industrialization from economic, geographic, and sociological perspectives.

Methods: The adequacy of the methods vary from one article to another, but they are generally comparative and small-area oriented.

Data: Data presented are useful for describing the total context of rural industrial growth in the United States.

Commentary: This book should be highly recommended for use in conjunction with Summers' work. Together, they provide a thorough, up-to-date background on rural industrialization that is essential for understanding energy development.

Murdock, Steve H., and Leistritz, F. Larry
1979 Energy Development In the Western United States: Impact on Rural Areas. New York: Praeger Publisher.

Summary: This book provides a comprehensive overview of the state of knowledge concerning the socioeconomic impacts of energy development on rural areas in the western United States. Topics included in its discussion are: dimensions of rural energy development; western energy resources and technology; the historical, social, cultural, demographic, ecological, and political context of western energy development; energy-related work forces; new populations in impact areas; effects on agriculture and local businesses; effects on local public sector costs and revenues; impacts on community services; impacts on social structures, social values, and social processes; the interrelationships of economic, demographic, and social impacts, policies, and programs for impact alleviation; and a summary of socioeconomic research needs related to western energy development. For each of these dimensions, the book reviews relevant literature, identifies the key issues, reviews the present state of knowledge, presents and evaluates available data in the subject area, and attempts to draw overall generalizations. It not only presents the major premises related to western energy development but also makes one of the first attempts to empirically examine the validity of such premises. The book provides one of the most comprehensive overviews of the issues and findings related to the socioeconomic impacts of energy development presently available.

Theoretical Framework: It is a survey of literature, and hence relatively atheoretical.

Methods: Methods vary in quality depending on the adequacy of the available data. Emphasis is placed on comparative analyses.

Data: Some data useful to the effort for the purposes of general description are presented.

Commentary: The book provides a useful starting point for a western social impact researcher. It provides an overview of the major issues and the state of knowledge related to western energy development.

Murdock, Steve; Leistritz, F. Larry; and Schriner, Eldon C.
1980 The demographic impacts of rapid economic development. Unpublished paper presented at the Seminar on the Social and Economic Impacts of Rapid Growth, 26-27 February, Scottsdale, Arizona.

Summary: This paper presents an overview of the state of knowledge concerning the demographic impacts of resource developments in the West with particular emphasis placed on the effects of energy development in the West. The paper uses secondary data from various communities in the West to examine the effects of resource developments on population growth, population distribution, and population composition. The analyses indicate that although rates of growth exceeding 10 percent per year have occurred in many western communities, "boom town" rates of growth are not common. In many cases, in fact, energy related growth appears to have led to population stability rather than rapid growth with energy related populations serving to offset historic patterns of decline. The analyses further indicate that the growth is concentrated in larger communities. Communities with less than 1,000 persons show relatively little growth. Finally, the analyses indicate that energy related populations are likely to be composed of younger, more highly educated, and wealthier adults. The effect of such populations is likely to be one of increasing the demographic validity of an area's population.

Theoretical Framework: The article is descriptive and thus no theoretical perspective is employed.

Methods: The article uses secondary data and comparative analyses. The limitations of secondary data are clearly acknowledged.

Data: Data are basically U.S. census estimates. Census data for 1980 would be superior.

Commentary: The paper provides one of the first attempts to empirically assess the actual demographic changes that have occurred in the West. In addition, it is written for extension and lay audiences and provides general guidelines for using demographic impact assessments. It should thus serve as a useful guide for the intended audience.

Murdock, Steve H.; Leistritz, F. Larry; and Schriner, Eldon C. Migration and energy developments: implications for rural areas in the Great Plains. In David Brown, and John Wardell, eds., New Directions in Urban-Rural Migration. New York: Academic Press.

Summary: This article uses community survey data from Mountain West Research's 1975 Old West Regional Commission study to examine the characteristics and effects of energy-related migration on rural areas and to explore the relative effects of energy developments on longtime residents and newcomers (migrants). The article finds energy-related migrants to be typical of migrants; in general they are younger, better educated, and wealthier than longtime residents. It finds that most migrants to western energy sites are from the western states and have achieved significant occupational mobility by their move to an energy-development area. The article notes that migrants are less satisfied with their new communities than longtime residents, but finds little support for the often assumed premises that: longtime residents and migrants will evaluate service needs differently, show mutual distrust and dissatisfaction; and that longtime residents have not also benefited from energy developments. The article serves to question several prevalent myths about energy development impacts and clearly suggests that in most cases, the impacts are less negative than the literature suggests.

Theoretical Framework: The article is largely descriptive, but also attempts to empirically evaluate many of the general hypotheses related to energy development.

Methods: Methods vary in adequacy and clearly use some relatively heroic assumptions about the comparability of various areas.

Data: Data appear to be quite good and useful for this effort. However, they are comparative data. It is evident that the data vary in quality from one site to another and that the comparative levels of development of the communities and the effects of these different levels of development are difficult to evaluate.

Commentary: This article provides an attempt to separate actual from presumed impacts. Within the limits of the data used, it is useful in pointing out that many of the premises about the social impacts of energy developments, particularly the relative impacts on new residents (migrants) and longtime residents, cannot be taken at face value, but require careful assessment for each impact area site examined.

6. THE EFFECTS OF ENERGY DEVELOPMENT ON FAMILY STRUCTURE AND WELL-BEING

6.1 Introduction

Energy development in the western states most often occurs in small, remote communities. The introduction of extractive and processing activities has been shown to have a considerable impact on the local communities and their residents (Schriner et al., 1976; Freudenberg, 1978; Gilmore, 1976, 1974; Thompson et al., 1978). Previous research on these impacts has tended to focus largely on the economic dimensions of such developments, on the infrastructure and service structure of the community, and to a lesser extent, on personal problems experienced as a result of rapid demographic, economic, and social changes (Murdock and Leistritz, 1979).

There is growing concern about the consequences of such rapid change for the structure and well-being of both individual families and the very structure (i.e., organization, activities) and welfare of the family system (Larson, 1977).

Several factors heighten the salience of concern about effects on the family for decision-makers and area residents. First, impacts on the family are reflective of the impacts of development on individuals. An individual's experiences, (i.e., frustrations, anxieties, satisfactions, successes, and failures) are often indicative of the experiences shared by several other people, especially persons in the immediate nuclear family. Second, the family is an important institution for the mediation and mitigation of personal problems; it is a major unit for integration in a community. For a majority of the population, it is the family unit which provides immediate care, counseling, and assistance to individuals. It is through the family organization that many of the services of the community are brought to bear on individual needs. The type and quality of helping services that individuals receive from professional agencies are often a consequence of family unit attributes and family negotiating efforts (Murdock and Schwartz, 1978). Third, the family performs a wide variety of functions for its members and the community, and its ability to perform this diverse set of functions (i.e., economic cooperation, reproduction, social control, mutual support, emotional gratification, sexual gratification, to name just a few important functions) is dependent upon the overall vitality and quality of its resources and relationships. Thus, when one function is negatively impacted, the family often loses resources and effectiveness in the performance of its other individual and community-service functions. In sum, the family is an important institution which may be impacted in energy development communities, for it is the arena where numerous impacts are actually experienced, and it is the structure through which individual and personal problems tend to be resolved.

There are many ways in which rapid growth may impact both indigenous families and families new to an area. Some of the them are direct and have immediate consequences for the resources, organization, and activities of the family unit, for example changes in family composition and income, and changes in an individual family member's occupation and opportunity structures.

Other impacts on the family result from changes in the environment of the family; for example, changes in access to and availability of services, costs of services, opportunities for new friendships, or in the relationships among community members. It is recognized that satisfactions and perceptions of one's lifestyle and well-being are often attained through comparison. Consequently, changes that occur in the community may be experienced by a family even though the individual family unit may not itself change. For example, one may grow up in a small community, live in the nicest, most valued home in the town and as a consequence of community growth see the prestige of home and neighborhood succumb to the higher prestige of new homes and new areas of the community. Thus, the effects of resource development may have considerable impact on the family unit through a modification of the family's personal and social environment. While such changes appear to be a normal part of life experiences, if generated by resource development, they are validly included among the effects of the development.

Impact on the family, both directly and indirectly, often results from two types of change. One type involves physical or material change, such as changes in the availability of resources, place of activities, or persons with whom one interacts. This type of change is relatively routine. For example, it is fairly common for friends and neighbors to change over time with deaths, migration, and changing interests. The other type, often referred to as structural change, involves a change in positions, roles, and relationships. If one's friendship circle shifts from neighbors to work associates or from family to unrelated individuals, this is a structural change. While both forms of change are important, evidence suggests that structural change has the greater and more pervasive effect on families and communities.

With this perspective on how social change affects the family, it is evident that longtime resident families and newcomer families may both be considerably affected by resource development, and that the effects may vary in both type and degree. Under some circumstances, it will be the longtime resident family which experiences the greatest change, while under others it may be the newcomer families who are affected the most.

There are three major steps associated with empirically assessing the impact of resource development on families. The first is to measure the nature and magnitude of change experienced by family units in a community. The second is to determine the degree to which the change is positive for family functioning. The third is to assess the degree to which the change is negative. While these latter two steps appear to be opposite ends of a single continuum, in family research, they need to be treated as separate variables. Many of the changes families experience have both negative and positive consequences, and these negative and positive features cannot and should not be averaged, because positive and negative features of a change are likely to rest with different family members. This characteristic is true throughout impact assessment, and again highlights the need for careful formulation of the appropriate units to which effects must be disaggregated and for which distributional effects must be analyzed. There are two perspectives which may be applied to each step of this analysis. The changes occurring to family units may be assessed against some objective criteria, accepted, and recognized as a valid indicator of well-being, or the changes may be assessed through the identification of the family members' own perception of the consequences of the change. The former usually involves analysis of secondary data, while the latter normally requires primary, respondent-provided data.

These perspectives can provide better insight into the consequences of energy developments for family units. Some of these consequences have been described in previous research on boom town communities; these can be anticipated from research on other forms of community change; and some can be simply anticipated from current understanding of family organization, its strengths and vulnerabilities. Throughout this discussion the research knowledge base is examined for its relevance to different types of families, particularly long-time and newcomer residents. The order of the issues examined is largely arbitrary and does not necessarily constitute a priority ranking of effects.

6.2 Review of Family Literature

6.2.1 Effect of Geographical Moves

Resource development in western states usually requires an in-migration of a large work force, and therefore, a common experience of a large number of families in communities affected by resource development is the geographical move to a new community. Geographical relocation has the potential for considerable impact on family units and can be a source of stress for family members. If stress is defined as a threat to the gratification of needs (Pascal, 1951), or the consequences of an organism unable to make an adjustive response to its environment (Schaffer, 1954), then this stress may be the result of many factors, such as change in kin, friendship, and neighboring patterns; change in employment; change in quality and satisfaction with housing; changes in services available to the family; and a reintegration into a new sociocultural environment. In fact, with the use of such stress measures as the Holmes and Rahe (1967) forty-three item social readjustment rating scale, a geographical move and its accompanying changes in activities can be one of the most overall stressful events in life. Furthermore, there is evidence that a series of stressor events in rapid sequences, such as is associated with a move, may produce more adjustment problems than single, catastrophic events, such as death of a family member, disaster, or divorce (Justice and Duncan, 1976). This potential is seen more clearly with a more detailed examination of the changes created by a move.

Geographical moves produce both functional and structural changes in the families' social network. Berardo (1966), for example, found that kinship interaction among new migrants to an aero-space related community declined initially with the move, and was only partially restored after an extended time in the new community. This disruptive effect on kin ties would appear to be most problematic for blue collar workers who traditionally are more likely to limit close ties to kin rather than developing non-kin ties (Dotson, 1950). The extent to which this pertains to traditionally mobile workers, such as construction workers, is not clear. In addition, Booth and Camp (1974) report that working class families who moved to higher status communities increased their reliance on aid from relatives for making the adjustment to the move. Among farm families, Wilkening, Guerrero, and Ginsburg (1972) report that kin interaction is significantly reduced by geographical distance.

The potential significance in this modified kin interaction lies in the unique role which kin play relative to other types of social networks. Litwak and Szelenyi (1973) report that kin more often provide long term aid to families, while neighbors provide short term aid and emergency aid, and friends provide intermediate term assistance. This prominance of kin aid is especially important in the early marriage stages of the life cycle and during disasters. For other life cycle stages and certain kinds of crises, there may be less difference among kin, neighbors, and friends in the services they provide for the family (Groog, Lipson and Levine, 1972). There is also some indication that in the absence of kin, neighbors and especially friends may substitute for kin assistance, but only to a limited degree (Litwak and Szelenyi, 1973). The obvious implication of this research is that it is important to know more than is currently available about the geographic origin of energy development workers, the extent to which they have kin in the new community or region, and how a previous history of geographic movement affects substitution among the assistance and integrative functions performed by kin, friends, and neighbors.

Along with the changes in kin networks, changes in friendship patterns and neighboring can also be expected to occur. McAllister, Butler, and Kaiser (1973) found that when they examined the interaction patterns of 500 metropolitan movers and non-movers, by comparing interaction before and after the move, movers tended to be more social and to report more frequent visiting. This was especially true of families with school age children; children seen to facilitate family members' integration into the new community. This higher rate of interaction with neighbors and friends, however, subsided with increasing time in the community, and, therefore, the temporary increase in interaction may be seen as an adjustive mechanism to the move. In a related study, Butler, McAllister, and Kaiser (1973) reported that the movers' high rate of interaction was with a few families, where non-movers interacted fewer times but with more families. Again, it would appear that this intense interaction with a select group of families may be a part of an adjustive process. Booth and Camp's (1974) study of thirty working class families relocating to a new neighborhood is also instructive regarding kin and neighboring change. Comparing pre- and post-move networks, Booth and Camp found that females reported a considerable decline in friendships shared with the husband. That is, friendships became more sexually segregated and considerable time was necessary for the wife's friends to become shared with the husband.[1]

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[1] Husbands did not share this view that friendships become more sexually segregated, but there is some evidence to suggest that the wife's perception is more accurate.

Among males, Booth and Camp found that initially neighbors were a part of the friendship network, but with the passage of time, co-workers became the dominant friendship group of these inmigrants. This pattern, however, may not be typical of all movers. The moves in this study were into a higher status neighborhood, so it is possible that the pattern was the result of the working class discovering they did not fit into a middle class environment. Finally, it was reported that the typical working class pattern of few non-kin friends was violated by the women who continued an extensive neighborhood contact despite the husband's lack of integration into the network; a result again, perhaps, of the change in neighborhood status associated with the move. An important consequence of the continuing difference between male and female friendship patterns was to perpetuate and perhaps exaggerate the already apparent tendency of working class husbands and wives to develop and maintain sexually segregated friendship groups. The significance of such a segregated network is apparent in much of the family research which suggests that friendship segregation among husbands and wives is associated with marital dissatisfaction and conflict (Bott, 1967; Scanzoni, 1965) and sex role inequality (DeHoyos and DeHoyos, 1966).

At this point, it is appropriate to state that the literature reviewed above demonstrates two important factors of concern in resource development communities. First, geographical location is likely to be disruptive of previous kin, friendship, and neighboring patterns. But, second, the degree of aid and the adjustment functions provided by the social networks studied are considerably greater than is often attributed to informal groupings in contemporary, urbanized, industrialized bureaucratic environments. Even in the urban environments most often studied, formal bureaucratic agencies and services have not replaced the important role of informal social networks. Surely, then, these same kinds of networks are important and are operating in the small resource development communities of the western states.

6.2.2 Integration and Voluntary Associations

An important factor affecting a family's integration into the community is its members' participation in voluntary organizations. These organizations facilitate learning about the community culture, and they perform an important role in the social participation function which Roland Warren (1970) has called a necessary part of "the good community." The effects of a move or relocation on voluntary organization participation are uncertain. Berardo's (1966) study of an aero-space community showed migrants with a lack of organizational participation. Among his 1,003 randomly selected newcomers, a significant majority (77 percent) had only very limited or no involvement in the community to which they migrated. On the other hand, Schriner, Keogh, and Gallagher (1976) found only 33 percent of newcomers in a development community reporting no organizational involvement compared to 18 percent nonparticipants among longtime residents. Likewise, newcomers were less often members of three or more organizations (24.2 percent) than longtime residents among whom approximately one-third were active in three or more organizations. In regard to specific organizational membership patterns in several North Dakota resource development communities, 32 percent of the newcomers reported church membership, and in descending order of participation were sports organizations, 18 percent; youth organizations, 17 percent; veterans organizations, 15 percent; and civic and other community clubs, 10 percent participation. Fewer than 10 percent of the newcomers participated in homemakers clubs, fraternal lodges, senior citizen groups, farm organizations, or health and safety organizations. The overall participation pattern within these organizations showed a lower rate of participation for newcomers than longtime residents. Yet, in contrast to Berardo's community, the rate of participation in these resource development communities is high.

6.2.3 Personal Disorganization and the Family

Just as there is considerable variation in changes in social relationships and social participation associated with moves, any particular change in participation may also have variable effects. Throughout the literature on the effects of boom town developments on personal and family well-being there are reports of severe stress and crisis stemming from changes in social participation and other changes. Typical of these findings are the writings of Kohrs (1974) which suggest that construction personnel and especially the wives of construction workers suffer from isolation, inadequate living facilities and social recognition. In addition, these conditions are suspected of straining the lives of each, leading to divorce, alcoholism, emotional problems, and delinquency, plus a host of other personal troubles. Even though much of this literature is of questionable reliability (see Section 2), it is certainly possible that some portion of geographical movers experience a negative form of stress which can result in problems of personal disorganization. It is important to identify correctly the major factors causing this negative stress, and to disaggregate both the causes of stress and the responses to it for longtime as well as newcomer families. There are implications that the consequences of any particular stress-producing situation are greatly mediated by a number of factors, an important one being the family unit, and another the personal approach to stress/adversity.

For some time, social impact researchers, and students of rural industrialization, have been calling for research focused on select segments of the impact community population (Murdock and Leistritz, 1979; Summers et al., 1976). Usually such research calls for a focus on occupational groups such as farmers, the aged in the community, and newcomers and longtime residents. In the family area, a similar, more specific focus on certain positions and roles is needed. For example, there is growing evidence of a need to focus on the special problems of women in resource development communities. Also, children, especially school-age children, should receive special attention; and the very limited research conducted among adolescents and young adults needs to be augmented.[1]

6.2.4 Effects on Women

Another area of family life for which there is a growing concern is the impact of resource development on women. This interest is a consequence of research focusing on the impacts on minorities, as well as a greater attention to impacts on families. A paramount issue for women is the effect of the resource community's opportunities for employment of women and the effect of the actual geographical relocation on women's employment. Long (1974) has examined the effect of the wife's employment on family mobility, and in the process suggests that the family's mobility has important consequences for female employment. First of all, he notes that for all age groups of men, except those twenty to twenty-four, married men have lower rates of migration than single men, and among married men with employed wives there is consistently less mobility than where the wife is not employed. On the other hand, if short distance moves and moves within counties are examined, working wives are associated with more frequent moves. Apparently, these short distance moves are to facilitate housing desires and demands for better community services made possible by the wife's income. While it appears that the greatest impact of female employment is on husbands' long distance migration and job related moves, further analysis of post-moving female employment suggests that among those families migrating long distances, female employment is reduced. This is in keeping with

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Miller's (1966) suggestion that interstate migration raised the labor force participation of men, but lowered the labor force participation rates for women.

Labor force participation for females may be a special problem in resource development communities. Cose (1979), for example, reports that energy industries are dominated by white males who account for 79 percent of the workers in oil and gas extraction, 79 percent in electrical services, 72 percent in gas production, and 97 percent in coal production. Lantz and McKeown (1979) further suggest that low female employment in energy industries is due to a strong, local opposition to female employment; union membership is largely male (only 6 of 3,000 union members in the district examined were women), and the only good paying jobs are in occupations traditionally not open to women. Davidson (1979) suggests that local women are faced with even greater employment problems because the wives of the new technical and skilled workers moving into the community are often more skilled and educated, and, thus, a highly competitive group for the limited employment opportunities available. The effect of shift work scheduling on the ability of women to participate in the work force, either in jobs themselves involving shift work or in jobs whose schedules do not mesh with the variability of the shifts worked by other family members, has been largely unexamined.

The impact of these limited employment opportunities for females in a resource development community becomes even more significant during a period of high inflation and during an inflation created in the local market by rapid growth. In such an environment female employment becomes most necessary, especially for those who head households. It is also apparent that the limited employment alternatives might create a considerable problem, especially among those committed to achieving sexual equality. The potential for these conditions to create a polarization between men and women appears quite important.

In addition to possible employment problems for women, the living conditions of boom town communities have often been viewed as most stressful for women. Much of the earlier discussed stress associated with geographical moves seems to be focused on women, and women's adjustment to stress has been a frequent barometer of boom town living conditions (Davidson, 1979; Cose, 1979; Larson, 1977). However, it would appear that work examining stress should be especially concerned with women and with the unique needs and concerns of women.

Lantz and McKeown (1979) suggest that stress due to energy growth is particularly important for women and that such stress is due to six prevalent conditions: (1) lack of individual space, problems created by inadequate housing; (2) limited meaningful communication; (3) limited recreational services; (4) limited services of importance to women, such as day care, (5) less attention being given to such groups as the aged; and (6) increased frequency of alcoholism, a condition which may be both a symptom and a cause of stressful conditions. To the extent that women both affect and are affected by their children and the family functioning to a greater extent than any other individuals, it is of particular importance for analysis of impacts on the family to understand how the energy development changes are differentially affecting women. Therefore, more detailed discussion of the evidence and theory concerning effects on women is included in Section 8.

6.2.5 Effects on Children and Adolescents

The primary immediate concern for young children comes largely from reports of increased instance of child abuse, often thought to be a product of stress associated with life in a boom town. If boom town life is stressful for parents and children, then increases in child abuse can be expected. For example, Justice and Duncan (1976), who strongly suggest that life stress is a factor in child abuse, found in their comparison of child abuser families with families not abusing, but experiencing child rearing problems, that the abusing parents scored nearly twice as high on psychological and social stress scales as non-abusing parents. As in other studies, they also found that multiple stressor events (like those associated with a move) are more likely to cause child abuse than are catastrophic, single stressors. Garbarino (1977) suggests that maltreatment of children is in part a consequence of stressful role transition in situations with cultural support for the use of physical force against children. In addition, it has been suggested that child maltreatment may be a consequence of an inadequate use of family support systems. (This might include kin, neighborhood, friends, and helping agency assistance.) Each of these conditions conducive to child abuse would appear to be present in rapid growth communities.

Other concerns for children in energy areas come from expected trauma associated with children's geographical relocation and change of school (Tooley, 1970; Switzer et al., 1961). Barrett and Nobel (1973) studied 159 migrating families with 318 children ranging from three to eighteen years of age. They determined the mothers' anxieties and observations regarding the child's adjustment, and assessed child personality and behavioral problems through the use of the Louisville behavior check list. They found from questions on mothers' concerns about their children making new friends that 90 percent of the children six to ten years of age reportedly made friends easily, while 69 percent of those children eleven and above made friends easily. The school change was perceived as difficult by 25 percent of the mothers, with a somewhat higher rate of problems (33 percent) reported by mothers of children eleven years of age or above. Overall, 81 percent of the parents reported the move as good for children, 6 percent said it was bad, and 13 percent reported a bad experience with the bad experience overrepresented among parents with older children. Child adjustment, as measured with the Louisville behavior check list, showed little difference between movers and their non-moving peers in regard to aggression, inhibition, or learning disability. Finally, there was some evidence that moves in the spring of the school year, allowing children to become integrated into the community, were associated with a more orderly transition to the new community.

While the research cited above shows few child adjustment problems, the overrepresentation of older youths (eleven years or older) in the problem population suggests the possible need for more research on teenager adjustment.

Burchinal and Jacobson (1963) compared adolescent farm and urban migrants and in-place urban adolescents' adjustment in the Cedar Rapids, Iowa area. They hypothesized that personality scores, psychosomatic dimensions of personality, and school related adjustments would differ among the three groups. Although there were some minor variations in scores among these groups the overall conclusion suggests that these adolescents had made a favorable adjustment to the urban environment.

In contrast to these types of reported personal problems, (primarily the reports of clinicians and clinical practices), there are works which challenge the extent to which personal disorganization is occurring. Since measures of personal disorganization have been used, often implicitly, as indicators of other important and pervasive change in the community and in the quality of life of individuals living there, it is critical that the degree and patterns in which it is occurring be determined accurately. The work of Wilkinson et al. (1980) examines the general theme of boom town life and personal disorganization and focuses specifically on divorce. It suggests that clinically based reports of personal disorganization may be exaggerated. By examining the divorce rate for 292 counties in the Old West Region, several of which contained major resource development communities, it was found that an increased divorce rate was not associated with rapid rates of population growth. In addition to the "clinical bias" of previous writings, it also suggests that there has probably been a theoretical bias through the use of early urbanization theories (Wirth, 1938), and anomie theories (Khors, 1974; Gilmore, 1976; Gold, 1974) which has served to emphasize problems associated with growth. In many cases these perspectives have been used without critical examination of their postulates or their applicability to the western energy development regions.

Other investigations of the indicators of personal disorganization also suggest less personal disorganization than is often reported. Little (1977) reported increased crime for Page, Arizona, but noted that the rate of increase was closely associated with rates of population increase. Admission rates to mental health facilities, calculated on the basis of data presented by Weisz (1979) on Campbell County, Wyoming, show no significant increase in mental health problems. In sum, the state-of-the-art and the present body of knowledge which is based on both clinical records and community research abounds with uncertainty regarding level of impacts on individuals and families. There is clearly a need for additional research which will generate more systematic data and provide a better framework for interpretation of both new and past works.

6.3 Summary

The literature reviewed indicates that a number of the issues critical to understanding the impacts on families in resource communities are those produced by geographical relocation. But, in addition to the trauma of the move, the special problems of resource communities (i.e., the likely limited infrastructure, the limited employment opportunities, and the general living conditions) combine with the problems of moving to produce a situation which is conducive to personal and family stress. The extent of stress, its consequence, and the mode of handling the stress seem to be less well understood.

Much of the assessment of social impact in resource development communities has failed to take the family unit as a primary unit of analysis. Much of the social impact research which has been relevant to family well-being has focused on the individual community resident as the primary unit of analysis. Recently, however, there has been a growing awareness of the need to see individual problems and resolution of boom town lifestyle problems as a concern of family units. These individual problems would appear to impact the entire family, and it is most often the family unit which is a major provider of resources for dealing with individual problems. Where external community resources are available for dealing with problems, it is still most often the family unit which acquires the services and negotiates with the service provider for the help for individuals.

The major issues affecting families in resource communities seem to be the problems of adjustment to a new and changing community environment. The ability to adjust to the new and changing environment is only partly a consequence of the individual family's attributes, resources, and relationships; however, the quality of the family's community environment itself -- its organization and structure -- seems to greatly affect family life.

The research indicated by this review is focused on understanding family problems and adjustment processes, and is concerned with determining the role of community structure in these issues. This research must examine the relationship between community structure and well-being by making family study a part of the larger social impact research effort.

REVIEWS

Berardo, Felix, M.
1966 Kinship interaction and migrant adaptation in an aerospace-related community. Journal of Marriage and the Family 28:296-304.

Summary: The basis for this study is the early investigations and writing on the urbanization processes which suggested substituting secondary for primary relationships, weakening of bonds of kinship, declining social significance of the family, and the disappearance of the neighborhood, and the later work of the 1960s which challenged much of this characterization, especially in regard to family impacts. The empirical research reported was conducted in the Cape Kennedy region where there was rapid urban development without a major core SMSA. One thousand and three newcomers (821 females and 272 males, primarily middle class status) were randomly selected. Typical migrants were relatively young, married, had two children, and had above average income and education. A large percentage had migrated from the Midwest.

The study tests the hypothesis that the greater the kinship interaction, the greater the satisfaction with the community. The assumption is that the availability of this interaction will provide social psychological support for newcomers during the initial phase of their becoming socially integrated into a new situation. The findings suggest that there is no significant relationship between degree of kin contact and corresponding levels of community satisfaction.

Kinship interaction was found to increase with length of residence after migration.

Other findings less central to the major thesis of the paper are: 64 percent of the migrants reported no involvement in the community organization, 13 percent indicated low involvement, and 9.1 percent high involvement. There was no relationship between frequency of kin contact and involvement in community organization. There was no significant relationship between the degree of kin contact and frequency of neighboring. Migrants from rural areas had higher rates of kin contact than migrants from large urban areas.

Theoretical Framework: The overall theoretical framework comes from the notions that urbanization produces an isolated nuclear family, and this isolated nuclear family behaves differently than families with kin ties. There is now considerable evidence that the isolated nuclear family is a myth. Some of the hypothetical family "effects" seemed a bit absurd.

Methods: The methodology seemed appropriate.

Data: The descriptive data may be of some interest, but they are extremely limited.

Commentary: This study originated out of the 1950s thinking that the family was "falling apart" and dire consequences would result. It was part of the 1960s literature which "corrected" much of the distorted 1950s image of the family.

Garbarino, James
1977 The human ecology of child maltreatment: a conceptual model for research. Journal of Marriage and the Family 39:721-735.

Summary: This article begins with the observation that much of the child abuse research and writing has been dominated by the clinically defined area of pathology that surrounds it and by the notion that child abuse is qualitatively deviant from normal care-giver relations, and by child abuse theories which are based on single cause models. The paper proposes instead, a human ecology perspective capable of incorporating a variety of factors and variables which are interrelated in child maltreatment. Maltreatment is seen as a consequence of stressful role transition with cultural support for the use of physical force against children and the inadequacy and inadequate use of family support systems as factors identified as necessary conditions for child maltreatment. Finally, the paper proposes a model for conducting and evaluating research on the human ecology of child abuse and neglect. The model includes: (1) the community context of child maltreatment and neglect, (2) the neighborhood support systems, (3) family characteristics, and (4) typology of research strategies. For each of these components, data sources, units of analyses, criteria for evaluation and selection of data and methodological considerations are discussed.

Theoretical Framework: The theoretical model used in this research is human ecology. The article provides a convincing argument for why the human ecology perspective is a most appropriate means of organizing existing knowledge and guiding future research in child abuse. In addition to providing justification for the human ecology perspective, the article offers a serious challenge to the personal pathology, deviant behavior, cultural deprivation, and maladjustment theories of child abuse. Though the theoretical framework is concerned with child maltreatment, it is apparent that the framework is appropriate for other "family problems," for example spouse abuse, divorce, health service utilization, etc.

Methods: This article is not an empirical study, but it offers considerable methodological guidance.

Data: No data are reported or available.

Commentary: This paper is exceptionally well written and should be very useful for establishing a perspective and sensitivity regarding social pathology and personal crisis. The paper should be useful for identifying theories and research strategies.

Groog, Sidney H.
1970 The family as a source of stress. In Sol Levine and Norman A. Scotch, eds., Social Stress. Chicago: Aldine Publishing Co., pp. 19-53.

Summary: This chapter suggests that much of this work on family stress is oriented to understanding how the family handles stress and adapts to stressor events. The purpose of this chapter is to examine the family as a source of stress. There is a brief discussion of the definitional problems with the concept of stress. The identification of family-induced stress is hampered by the various patterns of stressful events, for example long term vs. sudden crisis, stress which is in response to other stressor events or to adaptation to other stressor events. Different family members experience different aspects of the family environment as stress producing. Some events are stress producing at one time but not stress inducing at another time. Some stress apparently in the family may be a displaced stressor or a deferred stress. The question of ultimate cause plagues this conceptualization and understanding. Stress is usually viewed negatively, but certainly it may be a positive force for some members or for some actions of the family immediately or in the future. Each of these factors creates conceptual, identification, and theoretical problems.

The article develops a typology of sources of stress. First is the normal structure of the family unit and changes occurring in that structure. Here there is a discussion of the extended and nuclear systems. No conclusions are offered about which structural arrangements are stress producing. Secondly, skewed structures, such as broken family and related forms are discussed. These are structures created by death, divorce, desertion, or functional disruption brought about by minimal participation of some members. Another source of stress is value conflict and choice. Conflict in families is apparently most often over money, child rearing, and recreational choices. Work tension is also related to family conflict.

There is some discussion of the normal life cycle transition and the stress accompanying adjustments, such as initial parenthood, death, and serious illness.

Theoretical Framework: This chapter seems to be within the tradition which views changes and transition as problems. Its theoretical contribution is limited by its failure to prioritize life events, social structures, or actions for their stress producing potential.

Methods: There are only limited data (citations of conclusions) from other works.

Data: There is no empirical data base.

Commentary: This chapter has very limited utility to the BLM effort except to sensitize one to a wide range of family events which may be either the cause or consequences of stress.

Justice, Blair, and Duncan, David F.
1976 Life crisis as a precursor to child abuse. Public Health Reports 91:110-115.

Summary: This study attempts to determine the role of life stress in child abuse behavior of parents. It is based on a prominent theory in the child abuse literature which suggests that abuse is a consequence of environmental stress. The authors examine this thesis with questionnaire data from two groups of parents -- 35 abusing parents and 35 non-abusing parents who are having child rearing problems. Each group completed a 43 item life event scale where each event was assigned a weight representing the degree of readjustment required as a result of the event. The instrument was the Holmes and Rahe Social Readjustment Rating Questionnaire reported in T.H. Holmes and R.H. Rahe, "The Social Readjustment Rating Scale," Journal of Psychosomatic Research (1967:213-218).

Child abusers had a stress score of 234 compared to the non-abusers' score of 124, a difference significant at the 0.001 level when t tests were used. In addition, the article discusses psychological traits which further distinguish between abusers and non-abusers. The article emphasizes the fact that life crises, represented by nervous stress, simultaneously or in rapid sequence, are much more devastating than single major levels of catastrophies. There is a short section on prevention of child abuse but it does not have much value as a set of recommendations which would be useful in mitigation strategies.

Theoretical Framework: The life stress theory used here and the authors' discussion of multiple events as opposed to single crisis events represents a very sound theoretical argument for stress as a factor in child abuse.

Methods: The methodology seems quite appropriate for their study. The fact that abusers were compared with parents who were having problems with children but not abusing their children increases our confidence in the importance of life stress.

Data: The instrument used in this study contains 43 stressor events. A family changing jobs, moving into a new communty might have as many as fifteen or twenty of the stress experiences. There are little descriptive data reported and no data available for the BLM project.

Commentary: Work which explores the personal disorganization thesis of boom town developments would be wise to focus on life stress literature.

Litwak, Eugene, and Szelenyi, Ivan
1973 Primary group structures and their functions: kin, neighbors and friends. American Sociological Review 34:465-481.

Summary: This article is an examination of the role of primary groups in modern society. It suggests that there are important differences among primary groups and the functions they perform for their members. It is hypothesized that neighbors can best handle immediate emergencies, kin provide long term assistance, and friends provide an intermediate level of help. These groups play important roles contrary to the argument that primary groups are of little importance in a complex society.

Neighborhoods can function despite the population turnovers caused by labor mobility and changing land and housing functions. Organizations can be developed to speed entry into a neighborhood environment and integration into a community. For example, welcome wagons, PTA, churches, etc. may be geared to creating rapid neighborhood integration.

While modern technology has undermined some of the functions of the kin group and has changed its structure, there are mechanisms which support or maintain kinship ties, such as communication and lessened demand for face to face relations.

Friendship groups are maintained by affectivity and are thus not vulnerable to breaks in face to face relations.

The structure of the nuclear family, for instance small size, limited historical perspective and experience, limited objectivity, etc. make it necessary to have neighborhood, kin and friendship support systems.

Empirical data from a study of women in a Detroit housing development and interview data from a sample of 573 people in urban Hungary were examined for the role of kin, neighbors and friends. The data show that neighbors are used for short term help (emergency help), friends for longer term help and relatives for even longer periods of needed assistance. Furthermore, when kin are not present, neighbors and friends substitute somewhat for kin, but only to a limited degree. In other words, each group still maintains a primary function in providing certain kinds of care and assistance.

Theoretical Framework: This article offers a serious challenge to the urbanization theorists' charge of loss of primary group structure and substitution of secondary bureaucratic institutions, agencies, and structures. It particularly challenges the work of Wirth, Parsons, and many of the urban theorists prior to World War II and perhaps to the thinking up to the 1960s.

Methods: The methodological analysis is rather simple. The data analysis is more illustrative rather than for the purpose of testing the theory.

Data: The data are of little value to the BLM project though the findings and conclusions are important.

Commentary: The work may be of importance for interpreting social impact data. It has something to offer to those doing mitigation work. It is suggestive of how to strengthen primary groups and how to plan for their functioning in a boom town environment. The article especially calls into question those boom town articles which extrapolate heavily from urbanization theory (see especially Cortese and Jones, 1974; and Blevins and Thompson, 1974).

7. THE EFFECTS OF ENERGY DEVELOPMENT ON ATTITUDES, VALUES, AND QUALITY OF LIFE

7.1 Introduction

Review of energy research related to quality of life, to culturally held values, and to attitudes and beliefs affected by energy development reveals a field of research in disarray. Even though social psychology is wide in theory and concepts, the knowledge from this field simply has not been integrated into the western social impact assessment effort.

Three principal concerns emerge from review of the attitude, satisfaction, and quality of life literature with implications for the BLM project. The first is the need to develop an appropriate theoretical framework that clarifies the function and role of attitudinal-perceptual-evaluatory information in an assessment process. The reviews reveal two different although often implicit concepts of the roles of attitudes and evaluations. The first, illustrated in most of the satisfaction and quality of life materials, is that subjective perception and evaluation is important in and of itself -- and that it is, in fact, equally as important as the objective condition to which it is related. The second is that attitudes, beliefs, satisfaction, assessment of quality of life, etc., are related to behavior. The obvious question arises, "What relation do particular attitudes, perceived quality of life, or satisfaction with community have to community processes such as stratification and integration?" Obviously, these two emphases are not mutually exclusive, and, in fact, are complementary. The literature, however, appears to be dichotomized, and effort is needed to draw it together in a useful way.

The second principal concern is to identify, in particular, which attitudes and perceptions are the most critical for: (1) social assessment, (2) project research, and (3) the assessment procedures to be included in the guide. It is clear from the reviews that more thought must be given to the specification of which subjective elements are important to measure, and to what elements of the objective conditions they should be linked.

The third concern is to identify or develop methodogy(ies) for research and analysis that is applicable to either the research component of the project or the guide, or both. It is clear from examination of the research on attitudes, particularly on attitudes as they relate to behavior, that the utilization of a method that yields satisfactory results in terms of validity and reliability, that provides insight into the process of social change, and that also is compatible with the level of effort available for either the research component of this project or the assessment component of an EIS is problematic.

This section presents a theoretical construct which can be used to interpret values and attitudes related to energy development as they have been reported previously in WSIAs. Then major dimensions of the quality of life (QOL) issue are reviewed with suggestions for further research.

7.2 Perception of Freedom as a Theoretical Construct

In their recent study of Fort McMurray, Gartrell and his colleagues report two alternative views of changes associated with energy resource development (Gartrell et al., 1980). They found evidence in interviews with Fort McMurray residents that some people interpreted the changes as a loss of "community" while others felt freedom had been gained.

Residents of the community who volunteered observations about a loss of community were supporting the contentions of sociologists who have argued that urbanization, increased division of labor, differentiation of interests and associations, and geographic mobility combine to weaken the structure of social networks (integration), especially the primary ties to family, kin, and neighbors. However, other people in the same community expressed a quite contrary view, one which calls the urbanization hypothesis into question. How then does one reconcile these apparently inconsistent interpretations? The idea of "perceived freedom" and its relation to changes in the individual's life space may provide an organizing concept to understand value and attitude differences as they relate to energy development.

7.2.1 Perceived Freedom

The concept of freedom -- the exemption from necessity in choice and action -- has not enjoyed a high popularity among social scientists, especially among those who regard humans as merely reactive animals. Perhaps Freud was the founder of the notion that all human behavior is caused, a reaction to external factors. Most certainly, behavioral psychologists have accepted the assumption of Skinner that inner organizing and determining agents are unnecessary (Skinner, 1953), and many philosophers regard freedom as an illusion which individuals employ to enhance their sense of efficaciousness, but which does nothing to further an understanding of human behavior.

Popularity notwithstanding, the view of humans as strictly reactive beings overlooks the utility of treating perceived freedom as an explanatory construct. Even though perceived freedom may be illusionary, it is a phenomenon which has behavioral consequences. People may act on the basis of incorrect information, misunderstood communications, or distorted perceptions, but that fact does not make their action less real. Efforts to understand such "non-rational" behavior may benefit from attempts to reconstruct their "illusions."

In an extensive review of social/psychological research related to perceived freedom, Steiner (1970) states that an individual may believe s/he has either of two kinds of freedom. One is "outcome freedom" -- the ability of the person to affect the probability of obtaining a desired outcome. The other is "decision freedom" -- the belief that the person chooses the outcome and means of pursuing it.

7.2.2 Outcome Freedom

Outcome freedom is very similar to Lewin's notion of accessibility of regions in one's life space (Lewin, 1948) in which an individual's life space is represented as a topological region encircled by other regions which are inaccessible. Two factors were alleged to limit accessibility: lack of ability and social constraints. Heider (1958) expressed much the same two factors as a matter of "can" and "may." A person's "space of free movement" is presumed to be defined by the individual's twin beliefs that s/he can achieve a particular goal and that social reprisals will not be prohibitively severe. Thus, perceived outcome freedom may be said to exist "to the extent that one's desired activities and outcomes are thought to be unimpeded by the necessity to expend resources or endure social sanctions" (Steiner, 1970:189). This is also very much like the concept of "cost" in the language of social exchange theory as expressed by Blau (1964) and Homans (1961).

Outcome freedom is a positive function of the net gain or expected payoff less costs incurred. "A person believes himself to enjoy outcome freedom to the extent that he feels he can afford to incur the costs involved in obtaining the payoff he desires. If the costs are more critical to the individual than the outcome they promote, or if the individual lacks the resources with which to incur the required costs, he cannot be expected to credit himself with outcome freedom" (Steiner, 1970:189).

Two aspects of the expected payoff must be noted. Outcomes vary in the importance or desirability an individual attaches to them.

Similarly, outcomes vary with respect to probability of success, irrespective of their desirability. Generally, expenditure of resources and willingness to incur social disapproval increase the subjective probability of success, but not always. Sometimes an outcome may be perceived as totally beyond the individual's influence no matter how much cost is incurred, and the situation is seen as externally controlled, as in the case of the farmer's desire for adequate and timely rainfall. Other outcomes may be seen as being within the realm of potential control. It is with these that probability of success is a positive function of costs.

Consequently, perceived outcome freedom is determined by a combination of several factors: (1) desirability of the outcome, (2) subjective probability of success, and (3) costs associated with a given probability of success. Steiner asserts that they combine multiplicatively and additively: Gain equals valence of payoff times subjective probability minus costs. Perceived outcome freedom is a positive function of the gain an individual expects. It therefore follows that any changes in an individual's life space which alter one or more of the elements of the equation will affect perceived outcome freedom.

The economic and social changes associated with energy resource development certainly may be expected to affect the subjective probability of success and costs attendant to desired outcomes for many community residents. The same may be expected regarding control of undesirable outcomes. Thus, it is reasonable to expect that existing perceived outcome freedom will be threatened for some outcomes and enhanced for others. Moreover, the alterations may be expected to be non-random and unevenly distributed among community residents.

7.2.3 Decision Freedom

Perceived decision freedom is the extent to which an individual feels s/he has a choice in deciding: (1) whether to seek a particular outcome, or (2) whether to pursue one outcome rather than another. The focus is on volition or perceived self-determination. Undoubtedly it is related to perceived outcome freedom, at least conceptually. That is to say, an individual confronted with two or more similarly attractive potential outcomes with equivalent subjective probabilities of success and involving approximately equal cost would have a high sense of freedom of choice. In general, perceived decision freedom would be expected to reach a maximum when gains and costs are seen as equal and should be lowest when gains far exceed costs or costs are in great excess of gains. Decision freedom is thus a curvilinear function of outcome freedom.

There are other circumstances affecting perceived decision freedom in addition to outcome freedom. Locus of control (internal or external) is perhaps the most relevant since it appears to be a function of past experience and possession of resources. Rotter (1966) and Lefcourt (1966) report considerable evidence supporting the view that individuals differ in the extent to which they interpret successes and failures as due to their own ability as opposed to fate, chance, luck, or other factors beyond their control. Lefcourt (1966) also notes that all available research evidence indicates that self-attribution of control tends to be associated with high socioeconomic status in society; that is, possession of resources and personal record of successes. "People who can afford to incur few costs realistically perceive their outcomes to be strongly influenced by external factors, whereas those with an abundance of resources are inclined to believe that outcomes reflect investment" (Steiner, 1970:207).

This view can be broadened to include non-economic assets. Possession of multipurpose (or convertible) resources permit the individual to feel a greater degree of decision freedom. General intelligence, a vast store of relevant information, extensive friendship with powerful and influential persons, good health, a broad work experience, or multiple primary group memberships all enhance an individual's objective basis for a greater sense of freedom of choice.

The availability of means for obtaining desired outcomes also influences perceived decision freedom. A person who lives in a small, remote village has fewer opportunities for achieving a variety of desired outcomes than another person living in a large, urban locality. Thus, a person confronted with numerous desired outcomes seen as having a low probability of success irrespective of possession of resources should perceive limited decision freedom. Here the emphasis is on absence of opportunity to pursue desired outcomes (low probability of success) rather than limited resources.

As with outcome freedom, it is reasonable to expect that changes associated with energy resource development will alter the factors which determine decision freedom. Opportunities to pursue desired outcomes may increase for some residents and decrease for others; the utility of a resource or set of resources may change, threatening the decision freedom for some while improving it for others; and the subjective assessment of success in pursuit of outcomes may be modified.

7.2.4 Energy Development and Perceived Freedom

The reports of human responses to energy development fall into several categories, the most common being quality of life, community satisfaction, attitudes toward development, and mental health (stress reactions). Whichever approach is used, economic, social, and cultural changes associated with energy developments are generally expected to foster adjustment problems.

Several studies appear to document greater personal stress and illness, while others do not. Some studies report greater dissatisfaction with the community as a place to live and with quality of life generally; others find little evidence of such change. Still other studies indicate that changes associated with rapid economic growth affect people in the community differentially -- some gain, some lose; some are more satisfied, some less; some develop stress symptoms, some do not.

Regardless of the disruptions associated with development, however, a majority of the residents want more. There appear to be no exceptions to this finding among the many case studies.

The relevance of differential impacts for understanding the inconsistent and inconclusive reports of human response to energy development and other forms of rapid community change is emerging. Analyses based on urbanization and modernization processes seem to be ineffective in anticipating empirical evidence. The concept of perceived freedom, as outlined above, can bring a greater degree of order and understanding to the question of human response.

A good many of the empirical findings of previous studies could have been anticipated by the theory of perceived freedom. For example, Gartrell et al. (1980) found that unemployed married women with children who were living in apartments or mobile homes reported significantly more negative emotional states than any other category of women, married or single. Employed married women with no children living in a single family unit (dwelling, duplex, or row house) reported the fewest. The theory of decision freedom would have anticipated these results on the basis of relative availability of economic resources, network of contacts, and availability of opportunities to pursue a range of desired outcomes.

Similarly, the findings of Suzmak et al. (1980) that the landing of oil from the North Sea in Shetland did not produce serious psychiatric problems among island residents can be interpreted in terms of perceived freedom. Suzmak et al. reported that during the course of the project financial strain decreased in the development community and attitudes toward the development became more positive. They found that women in the development area lost psychiatric symptoms while women in the non-development area nearby gained symptoms. From their description of the roles of women in Shetland and the changes associated with development it seems reasonable to infer that the objective bases for increased perceived freedom (both decision and outcome) had occurred.

Freudenberg seems puzzled by his finding in Craig that youth of both newcomers and long-term residents showed signs of psychological distress when compared to youth in three nearby communities (Freudenberg, 1980). Again it seems reasonable to anticipate this result utilizing the logic of perceived freedom. Youth of long-term residents are confronted by a situation that reduces their certainty of success in the pursuit of outcomes. The rules of the game have changed and, at least in the short run, they are less sure of the consequences of various "investment" strategies. Such a situation would reduce their perceived freedom. For the newcomers, uncertainty may come from a participation in a process with somewhat unknown rules and from their inability to develop resources which could be used to pay the "cost" of raising the probability of success in desired outcomes. In short, both sets of youths are in a situation which, at least in the short run, reduces their perceived freedom.

The value of perceived freedom as an explanatory theory linking structural changes and human responses seems quite promising on the basis of post hoc analyses of previously reported findings. However, ex ante analyses would be much more compelling. It is recommended, therefore, that the field research phase of the project incorporate opportunities to "test" the perceived freedom theory.

As is made clear from the above discussion, the utility and meaning of value and attitude measures can only be determined by placing them within a theoretical construct, such as "perceived freedom." Other theoretical constructs or interpretations of social/psychological reactions may provide insight to the interpretation of response to the changes associated with energy development. The perceived freedom construct was used here in fact to demonstrate the necessity of having an organizing mechanism of this type and some of the ways its validity and pertinence could be tested. As the research for the project proceeds, other theoretical perspectives may emerge which supplement, modify, or replace the perceived freedom construct.

In addition, the discussion was used to demonstrate how data on values and attitudes need to be analyzed in assessing the effects of development. Attitudes and perceptions of development are reflective of the stratification system and degree of integration in a community. Analyzing values or attitudes in the aggregate for community members is meaningless. Data on values and attitudes are informative only when they are used to elucidate how development inputs are processed through a community. Since the effects of development are distributed differentially among community members whose individual value structures also vary, perceptions of the effects of development should vary, and must be interpreted in this context. As the discussion of change in community organization in the first section implied (see Figure 1, Section 2), values and attitudes are affected by development and in turn affect the community processes of differentiation, stratification, and integration. Identifying and explicating the interrelated effects of social psychological reaction and community organization processes is a legitimate goal for the study of values and attitudes as they relate to development.

7.3 Considerations of Quality of Life

Quality of life and way of life have become catch words in recent social impact literature. Way of life, or lifestyle, varies from place to place. Consequently, no particular set of variables may be identified which is pertinent to all communities. Instead, lifestyle must be defined as the "three or four components which, in a particular situation, best characterize the relatively distinct way in which a certain group of people go about their daily activities" (Gale, 1977).

Quality of life may be thought of as the evaluative dimension of way of life -- quality of life is determined by how persons evaluate their lifestyle. Considerable tension exists because individuals' subjective evaluations of a way of life often do not correspond to an evaluation of that way of life as measured by objective criteria. Sufficient discrepancies exist between the two measures to support continuing debate and conceptual division. A particularly difficult methodological problem is how to deal with the effects of anticipation and expectation on evaluation.

On the one hand, residents may place such high subjective value on a lifestyle that they perceive it threatened by development even if the impending change improves way of life from the objectively defined perspective of the residents. More frequently, residents may welcome development because they anticipate improvements in the objective qualities in their lives. It is then extraordinarily difficult to determine the effect this anticipation has had on residents' subjective evaluation of the changes that occur. Clearer delineation of the mechanisms involved in this process and a more accurate understanding of the factors causing discrepancy between objective measures and subjective perceptions are necessary if quality of life is to provide an operationally useful concept.

Another difficult methodological problem in the attempts to operationalize the conceptually appealing concept of quality of life is the specification of the variables or dimensions essential to adequately measure the effect of energy development on quality of life. It is generally agreed that there is some set of variables in each local structure which is important to way of life and quality of life in that locale. In southern Utah, for example, Little and Lovejoy (1979) found an integrated set of institutional activities linked by family and religion. These institutional structures and core values attached to them provided the foundation for the functioning of the local economy, schools, and political activities. Development which would severely alter these core activities and correspondent values would, by definition, affect way of life and quality of life in a manner probably considered to be negative by most long-time residents. Such change might well occur if the development were sufficiently large, prolonged, and differed on the variables central to the local structure of the community, despite the best wishes and efforts of a majority of local residents (who might, in fact, favor development). However, change in variables less central to the way and quality of life would be expected to have less effect.

The Navajo, and many other Native Americans in the areas of potentially high coal development, have a less differentiated social structure than the Mormons, and are heavily committed to an extended kinship system located in places with which they closely identify. Evidence by Henderson and Levy (1979) indicates that, at least on the basis of the experiences of a single generation of a relatively traditional culture, way of life and quality of life may be remarkably stable and flexible despite considerable pressure for change if certain core variables prevail. They maintain that commitment to clan and locality may persist following coal development, even in circumstances where there has been participation by tribal members. Levy found that skilled industrial craftsmen retained their commitment to clan and locality over all other commitments, with the development-related work constituting only an interlude in their lives rather than an accepted occupation, thus causing minimal modification of their agrarian-herding lifestyle. An extended exposure to fundamentally different lifestyles, however, may well erode this commitment to clan and locality and lead to the demise of this traditional lifestyle and, subsequently, to revisions of their feelings regarding life quality.

Ranchers in Montana constitute a still different lifestyle and evaluative formula. Their dependency upon the land and vulnerability to the elements make them extremely cautious of disruption of the physical environment. The isolation caused by immense spaces and few persons has made family and neighbors the most cherished element of the social organization. Such concerns, which are integrated into the system of production, dominate many of their other informal and formal institutionalized activities (Jobes, 1980). Many residents in areas sharing similar characteristics have expressed strong opposition to coal related development out of fear that their way of life and quality of life would be negatively affected. If this type of relationship between family and neighbors does, in fact, constitute a core structure of this way of life and its evaluation, these fears may be justified, since the influx of large numbers of newcomers will unavoidably affect these relationships.

These examples should not be considered exhaustive or inclusive of all types of potentially impacted communities in the Rocky Mountain region. However, they illustrate some of the regional diversity among its rural communities and the need to analyze the social organization of the community in order to identify the variables critical to an assessment of the effect of development related change on quality of life.

Similarities exist in each case mentioned above. Nevertheless, differences critical to the impact of energy development on both way of life and quality of life are evident. The most fundamental similarities are habitation of rural areas and a dependence upon agrarian production. The social organization in each exhibits strong attachment to some kind of family grouping and to an additional, more extended interaction network.

Rural communities undergoing rapid development experience objectively observable modifications of their social structure which make them more similar to urban areas (Freudenberg, 1977). Rural communities, despite considerable convergence in many behaviors toward a more standardized urban norm, continue to differ in other aspects indicating the developmental continuum exists and persists. Evidence indicates that real differences exist between urban and rural areas, and that rural concerns related to a deteriorating way of life bear further examination.

Another major issue, deriving in part from the existence of unique styles of life and closely related to the preceding discussion of perceived freedom, is the participation of local residents in the decision-making process related to energy development. There are many indications that attitudes toward change in way of life and evaluations of such change are related to residents' sense of participation and belief that their participation or action would affect the outcome.

Interpretation of this would evidence utilizing the concept of perceived freedom provides congruent conclusions.

Rural residents and small town dwellers have been accustomed to participating in community decision-making. Most frequently their activities have been limited to local staffing problems and the perpetuation of already operating institutions. Generally, such activities are effectively carried out in informal ways, though the formality of voting does take place. The intrusion of change, especially change initiated by external forces through formal mechanisms, is beyond the capabilities of most local rural and small town dwellers. Even the most devoted participants are likely to discover how ill-prepared they are to try to direct development as they would like. Absence of specific expertise, particularly in complex legal matters, is quickly recognized. Lack of knowledge and resources to accumulate information to support their position is frustrating. They are likely to find their area an arena upon which pro- and anti-development players attempt to decide how it will be utilized while their concerns receive scant attention (Jobes, 1976).

The manner in which participation of local residents proceeds has important ramifications not only for an overall assessment of quality of life (which is, in reality, a summary statement about processes and outcomes), but also for the four fundamental processes involved in social organization: differentiation, linkage, stratification, and integration. Although some implications are relatively easy to identify, the manner in which the social system is modified by this focal activity is not immediately clear. Nevertheless, the concepts of perceived freedom and social organization appear to provide promise for explication of the complex process of social change and participants' evaluation of the consequences of that change.

The methods appropriate for measuring way of life and quality of life can be any of the conventional techniques available for social science. The important issue concerning methods is whether the instruments utilized are valid and reliable for the communities being analyzed. This implies that a grounded approach be used instead of techniques which are chosen out of convenience (Glazer and Strauss, 1967). This means that secondary data or standardized instruments should be used only if they measure variables of importance to the local social structure and of concern to local residents. Importance must be determined in terms of the operations of the local social structure and the meanings attributed to it by its residents. The use of comparative analysis with care not to lose the subtle differences and uniqueness of each place, should prove useful to both residents and researchers.

REVIEWS

Baldwin, Thomas, et al.
1976 A Socioeconomic Assessment of Energy Development in a Small Rural County. Argonne, Illinois: Argonne National Laboratory.

Summary: The interaction between attitudes related to economic opportunity, political change, and environmental relations are demonstrated in attitude data collected by Baldwin, et al. The data were collected as part of detailed case study of the socioeconomic impacts associated with construction of a single coal gasification plant in a western county in North Dakota during 1974-1975. Approximately 300 persons were contacted via a random sample selected from the latest published telephone directories. Respondents were asked the following question:

Suppose that a large industrial plant that would employ about 800 people were proposed for Mercer County. The plant will manufacture heavy equipment. Do you think you would favor such a plant?

Of the total respondents, 59 percent stated they would favor the plant, 5 percent were neutral, 21 percent were opposed, and 15 percent either didn't know or refused to answer. Respondents then were asked:

"You said that you would oppose (favor) it (the plant). Why do you feel that way?"

The first three answers of each respondent were aggregated. Results are summarized in Table 1.

Examining the responses for both opposing and favoring industrial development helps clarify the mix of attitudes held by at least this sample of rural residents. People who favor a new plant do so mostly because of expected economic benefits. People who oppose such a plant apparently fear negative political changes. Only a small percentage feel that environmental change will be of much consequence. This is an interesting result since the county surveyed is in the heart of North Dakota's coal lands and already has two electric generating plants. Thus, these people have a history of experience with coal development on which to base their attitudes.

Theoretical Framework: The underlying theory is that attitudes are related to objective conditions and that people have and can express reasons for their attitudes.

Methods: The methods appear appropriate for the purposes of the article (to describe the prevailing attitudes toward development).

Data: Data may be available. The interest in the data would be to obtain a large enough data base from a variety of surveys to examine some of the subgroup differences within communities to examine what relationship economic or political position has with attitudes toward energy development.

Commentary: The interest of this study to the BLM project is the relationship between reasons given for their attitude toward energy development. If these data and some supplemental data on economic/occupational conditions for those segments can be obtained, a data base for better analysis of the relationship between objective change, perception of change, and attitude might be possible.

Table 1: Reasons for Favoring or Opposing a Heavy Manufacturing Plant Site in Mercer County, North Dakota.*

Top Three Reasons for Favoring the Plant

Respondent's Place of Residence	Beneficial Social Change	Improved Public Services	Environmental Benefit	Economic Improvement	Employment Opportunities	Miscellaneous
Town	12%	4%	3%	24%	30%	3%
Rural	2%	1%	2%	8%	11%	1%
Total	14%	5%	5%	32%	41%	4%

Top Three Reasons for Opposing the Plant

Respondent's Place of Residence	Detrimental Social Change	Impact Public Services	Environmental Degradation	Economic Disbenefit	Miscellaneous
Town	35%	11%	9%	2%	.3%
Rural	24%	3%	6%	9%	.7%
Total	59%	14%	15%	11%	1 %

* Condensed from the original table in Baldwin et al. (1976).

Deseran, Forrest A.
1978 Community satisfaction as definition of the situation: some conceptual issues. Rural Sociology 43:235-249.

Summary: Satisfaction with local living conditions and with the community, per se, has become a salient issue in the study of social change. Deseran provides a conceptual analysis of community satisfaction intended to increase the precision of research in this area. His thesis, supported by an extensive literature review and discussion, is that satisfaction is a "definitional" component and community is a "situational" component of the "definition of the situation." This, he says, places community satisfaction within a useful theoretical framework and sets the stage for more precise operationalization of community satisfaction than has appeared in previous work. If satisfaction is a definitional component, its nature and role are to be found in the needs, wishes, and other social psychological aspects of the person; if community is a situational component, its character is to be located in structural and other parameters of the local society. These provide a fundamental linkage between the person and the local social reality. Operational implications of this thesis are discussed with regard to three important aspects of community satisfaction, namely factual beliefs, evaluations, and relevance. Most previous research has dealt with people's beliefs and evaluations about the community. The definition of the situation perspective, with community seen as a situational element, allows for bringing in relevance as an explicit focus of research; that is, variable objective characteristics of community can be examined from the perspective of structurally defined community subgroupings.

Theoretical Framework: This is an attempt to use an explicitly phenomenological perspective to organize research on a topic which has generally been treated from an essentially non-theoretical perspective. It is remarkable in that regard and in that little previous research use has been made in sociology of the phenomenological perspective.

Methods: The logic employed in the discussion is impressive, as is the review and use of previous research.

Data: No data are presented (which is, unfortunately, generally the case in discussion of definition of the situation). The discussion, however, produces explicit suggestions which can lead to improved measures in future community satisfaction research.

Commentary: An important implication of this study is that satisfaction surveys should be based upon recognition of the interactive relationship between the individual and the community. In a practical vein, this suggests that satisfaction measures should be constructed to reflect observable structural parameters of communities. This would require that salient features of a given community be identified before constructing the satisfaction measures; but it would make it possible for these measures to be used not only to indicate satisfaction levels but also to validate theoretical hypotheses concerning the nature of community.

Marans, Robert W.; Dillman, Don A.; and Keller, Janet
1980 Perceptions of Life Quality in Rural America: An Analysis of Survey Data from Four Studies. Ann Arbor, Michigan: The University of Michigan.

Summary: Perceptions of several life domains are considered for rural Americans and compared with urban residents. Data are from one regional and three national surveys which were conducted by ISR between 1971 and 1976. Overall, comparisons indicate that people in small rural areas (places under 2,500 in a non-SMSA) express higher levels of life satisfaction than those living in large urban areas. However, such differences are not equally apparent in all the life domains examined.

Theoretical Framework: There is no theoretically oriented analysis in this report. Rather it is a secondary description of American's perceptions by place of residence using data collected for other purposes. Implicitly, there is the assumption that subjective assessments can be adequately measured and that they are important components of individual and aggregate social well-being. In this regard these data reflect the growing discontent of the 1960s with national accounts which consider only economic efficiency -- GNP, worker output, etc.

Methods: These are national surveys (except the Northern Michigan study) and, as is usually the case, the rural segment is very "thin" in the final sample. Consequently, there is too little data (too few respondents) from small rural areas to permit intensive analysis of factors differentiating residents within them. Thus, it is virtually impossible to produce reliable findings -- a point the authors note explicitly.

Data: The ISR generally does high quality survey work. However, the limitation noted in Methods probably makes the data of little value for our secondary analysis effort.

Commentary: These tables can be useful as baseline data against which our field data can be compared. It may be useful to inquire of Marans whether a mountain states break-out of the data is possible. Regional comparisons are all south vs. non-south.

Schuman, Howard, and Johnson, Michael
1976 Attitudes and behavior. Annual Review of Sociology 161-207.

Summary: In this paper, Schuman and Johnson review the major works on the relationship between attitudes and behaviors. The review presents the methods and findings of research on consistency between attitudes and behaviors and explores the implications of the accumulated evidence to the basic premise that attitudes (as measured by questionnaire-type responses) "cause, reflect or at least correlate substantially" with behaviors.

Tracing the historical development of research on this problem -- from LaPiere's classic Chinese couple study in 1934, which showed no correlation between attitude and behavior, the authors identify the major areas of attitude-behavior sets that have been examined, and provide commentary on the methods, the findings, and the interpretations made from the data. They provide an overview of the theoretical and methodological considerations which shaped the attitude-behavior literature (conviction that attitudes do relate to behavior) and the methodological and theoretical spin-offs resulting from the attempts to solve the attitude-behavior relationship problem.

The authors conclude that when appropriate measures of attitudes and behaviors are employed and appropriate attitude-behavior sets (i.e., attitude-behavior congruence, similar levels of specificity, etc.) are examined, substantial consistency between attitudes and behavior has been found -- but, they warn, not in all cases. The authors point out that the early expectations for complete correspondence between attitudes and behavior were unrealistic (especially for the social sciences) and that by failing to take into account the influence of reference groups and other antecedent and situational determinants of behavior, early researchers had missed many of the factors which account for, or help specify, attitude-behavior relationships. The article concludes with an assessment of the most promising avenues for research in this field.

Theoretical Framework: The article provides a useful theoretical perspective on the meaning and appropriate use of attitude and attitude-behavior information. It is insightful and analytic.

Methods: The article provides useful recommendations and examples for appropriate methods of attitudinal research.

Data: No data are presented. Reports of other research findings only, none of which are of particular use to the study in terms of data.

Commentary: This article is of no value to the project for its review of the attitude-behavior literature and its analytic discussion of the applications of this type of research and theory. The authors emphasize the potential of the methods and concepts developed from attitude-behavior research "for exploring the ideas, beliefs, values, conflicts, and especially frames of reference of large and important populations," but warn that the research question to which the methodology is applied must be carefully and sensitively defined.

8. THE EFFECTS OF ENERGY DEVELOPMENT ON NATIVE AMERICANS, WOMEN AND OTHER SPECIFIC SOCIAL GROUPS

8.1 An Overview of Major Findings Concerning Native Americans

There are relatively few studies which address the impact of energy development on Native Americans, and the focus of this work is on reservation residents (Jorgenson et al., 1978). Published work assessing the effects of energy development on nonreservation Indians is virtually nonexistent. The scarcity of literature concerning Native Americans and energy development imposes a piecemeal quality to a discussion on this subject. The question of how nonreservation Indians are affected by energy development cannot be addressed directly. However, the literature on how Native Americans living on reservations have been affected by energy and other types of developments suggests some possible answers. Nevertheless, the available literature leaves much to be desired in terms of coverage, completeness, and overall quality.

Most of the work concerning the effects of development on Native American communities has been done by anthropologists. For the most part, this work is fragmentary in the sense that only one or two reservations are covered in any given study. Sometimes the research is confined to one or a few communities within a reservation. As a result, the findings from any particular study suffer from a lack of generalizability. The questions formulated in much of this work are designed in response to issues of interest to anthropologists. That is, the research is designed to answer broader intellectual questions rather than to provide a detailed analysis of the consequences of development per se. Some of these studies also lack completeness. Most of the available research on the consequences of development in Indian communities is either impressionistic or employs data of dubious quality.

In fairness to the researchers, adequate data collection and analysis appeared to be constrained by limitation of funds.

In each of the few studies of Native Americans which develop an explicit theoretical framework, a colonization model is adopted. There is consensus that Native American communities resemble colonized Third World nations. This perspective emphasizes the underdevelopment of Native Americn communities and the dominance in the local community of the federal government, particularly the Bureau of Indian Affairs (Bee and Gingerich, 1977; Mooney, 1976; Adams and Ruffing, 1977; Owens, 1978; Robbins, 1975; Callaway et al., 1976). The theoretical justification for adoption of the colonization model rests on the historical development of the relationship between the tribes and the U.S. government, which corresponds with the intellectual tradition by which colonialism is defined. Legally, the federal government has recognized the sovereignty of Indian nations in the U.S. Constitution and in the landmark Supreme Court case of Worcester v. Georgia in which Chief Justice Marshall upheld the concept of tribal sovereignty. Actual federal policy has alternated between attempts to oppress, annihilate, or assimilate the tribes. The success and wisdom of these policies continue to be argued, but it is beyond debate that the federal government has succeeded in subduing the tribes and bringing them under federal authority.

Conquest is only the first condition for establishing a colonial relationship. The central characteristics of such a relationship appear when the colonizing authority is able to exploit and/or extract rerources from the colonized nation at little or no cost. In a colonial relationship the colonizer receives the bulk of the benefits accruing from the relationship, while the colonized suffer hardship or receive few benefits from the exploitation of their resources. This perspective lends itself to discussion of the lack of benefits Native Americans receive despite the large-scale development of their resources (Jorgenson et al., 1978; Adams and Ruffing, 1977; Owens, 1978; Mooney, 1976; AIO, 1975).

The fact that most research on the impact of development on Native Americans focuses on the reservation implies an additional issue. While the BLM Social Effects Project excludes reservations from specific consideration, as a practical matter, the presence and influence of reservations on off-reservation Native Americans cannot be ignored, and an adequate approach to this issue must be developed.

The colonization analogy can be extended to Native Americans residing away from the reservation. In this perspective, Native Americans living off of the reservation can be thought of as economic refugees in the same sense as Cubans or Haitians are. Similarly, to the extent that the problems of the reservation are exportable via emigration, a reasonable expectation is to find that problems for off-reservation Indians and Indian communities are similar to those found on the reservation. The few research findings on Indians in urban communities lend support to this expectation.

The existing research relevant to the impact of energy development on Native Americans can be divided into two categories. One set of studies is straightforward demographic analysis designed to document community or individual attributes and, in a few cases, changes in these attributes. The second set of literature is more relevant to the concept of Native Americans as colonized nations.

8.1.1 Demographic Analysis of Native Americans

The demographic literature, while straightforward, is difficult to summarize with any clarity because the analyses are usually done with specific reference to a tribe or group of tribes within a limited geographic region (e.g., Montana Economic Study Group, 1970; Mountain West Research, Inc., 1977; Humphrey, 1969, 1970; Kraus, 1970). Summarization is also difficult because this research is reported as the measured values for a litany of characteristics with little effort made to summarize or interpret the individual findings.

For the states covered by the BLM Social Effect Project, few very broad generalizations are possible. In human capital terms, Native Americans compared to Anglos have very low levels of education and marketable skills and generally are in poorer health (deHoyos and deHoyos, 1969; Humphrey, 1969, 1970; Kraus, 1970; Mueller, 1969; Montana Economic Study Group, 1970 Urban Management Consultants, 1974). Excessive poverty, unemployment, and to some degree, social disorders such as alcoholism have been produced by the low stocks of human capital in tandem with the lack of jobs on the reservation (Kraus, 1970; DeLong, 1973; South Dakota State Dept. of Public Welfare, 1972). Attempts to alleviate these problems, principally efforts to stimulate development on or near the reservations, have met with limited success (Christenson and Niederfrank, 1971; Boise Cascade, 1972; Comptroller General, 1975; Fry, 1976). Specifically, these development activities including those associated with energy, have failed to create effective employment opportunities. The power plant and coal mine near and on the Navajo reservation employed only an insignificant number of Navajos. The Navajos who were employed tended to be relatively young, geographically mobile, and well educated.

8.1.2 The Colonization Perspective As Applied to Native Americans

The second set of literature, which pertains to the idea of reservations as colonies, is relevant to the extent that Native Americans may view energy development projects as opportunities for upward social mobility. Available data indicate that Native Americans consider an improved economic position desirable but are more ambivalent toward the idea of energy development projects, especially those to be located on the reservation (Mountain West Research, 1977; Schoepfle et al., 1978).

In a sense, Native Americans living away from the reservation and participating in energy development projects can be considered economic refugees from the reservation. The decision to opt for refugee status may be prompted by the availability of jobs created by energy development, but it is subject to other conditions as well. Specifically, assessment of the impact of off-reservation energy development on Native Americans' migratory patterns and cultural habits and the consequences of their participation in Anglo society must all be given attention. Migratory patterns reflect Natives Americans' decisions about when, how, where, and how long to leave the reservation. Cultural traits are relevant because they may encourage, preclude, or condition participation in energy developments in particular or in Anglo society in general, and in turn identify aspects paticularly sensitive to change or critical to maintenance of acceptable lifestyle. Finally, participation in Anglo society may provide some benefits such as improved income, but may also impose both visible and hidden costs such as stress-related health impairment.

The ready availability of transportation and the relative proximity and open boundaries of the reservation mean that Native Americans can move to and from their respective reservations with comparative ease. Hackenberg and Wilson (1972), studying the migration habits of the Papago in the Southwest, identified several types of migratory patterns, two involving movement within the reservation (sedentary and linear migration), and one involving permanent emigration from the reservation. Of more relevance is what they call circulatory and oscillatory patterns, regular movements to and from the reservation distinguished only by the duration away from the reservation. Circulatory movement is more frequent than oscillatory. Hackenberg and Wilson found that Papagos were reluctant to move from the reservation but did so for economic reasons. Extrapolation of these findings would indicate that if attractive economic opportunities were created by development, Native Americans might be enticed to become off-reservation residents, a process which would increase the off-reservation Indian population. The Hackenberg and Wilson findings indicate that this would be likely to occur only if commuting were not possible and alternative opportunities were not available on the reservation.

Tribal culture is another factor which can affect a multitude of actions besides migration and should be taken into account. Caution must be taken, however, since there appear to be aspects of culture specific to each tribe which cause response to development-related change to differ markedly from one tribe to another. Among the Papago, Hackenberg and Wilson (1972) found a certain willingness to migrate; and in another article, Hackenberg (1972) notes a long-standing tradition for this migration. The Navajo, on the other hand, have shown a strong resistance to leaving the reservation and to becoming involved in economic activities different from those available on the reservation (mostly livestock production). In one study (Ruffing, 1976), the Navajo preferred unemployment to leaving the reservation for work on a railroad. The message of these examples is that cultures vary greatly from tribe to tribe, and generalizations cannot necessarily be made from one tribe to another. It must be anticipated that the responses of Native Americans to energy development will be heavily conditioned by the particular tribal culture. The Navajo who have a religious bond to the land and a long-standing tradition in animal husbandry have expressed resistance to and apprehension of further mining development on the reservation (Schoepfle et al., 1979; Jorgenson et al., 1978; Mountain West Research, 1977; Goodman, 1976).

There has also been a continuing debate regarding the effect of nearby development and economic opportunities on the assimilation distinctiveness of urban culture. Some authors have argued that Native Americans are gradually being absorbed into the mainstream culture (Spicer, 1961). The research of Schoepfle et al. (1979) and Mooney (1976) have shown little evidence of assimilation. They argue that the data indicate that either the process of assimilation is so slow as to be imperceptible, or that Native Americans are not being absorbed at all. According to Tax (1978), the most likely scenario is that Native Americans will adjust to an increasingly urban society but will continue to maintain their cultural distinctiveness.

Whether Native Americans will become assimilated into the mainstream of American society like other immigrant groups will depend in part on whether they are also absorbed into the economy. In the existing research on Native Americans much attention has been devoted to this issue. The tentative answer is that Native Americans have participated little in the mainstream economy and have made few economic gains. Mooney presents evidence to show that Native American communities are satellites to the larger society in an exploitive relationship which returns few economic benefits to the community. Specifically, her data show that the Salish are more likely to be unemployed, be paid less, and have worse jobs than a comparable group of non-Indians. Adams and Ruffing (1976; 1977) report that despite an upgraded community intrastructure and an increase in coal mining on the reservation, the residents of Shonto (a Navajo community) have gained very little, and that income and educational levels have remained essentially unchanged since 1955. A similar theme is also found in the set of papers by Jorgenson et al. (1978) which argue that a combination of factors has prevented the Navajo from receiving any appreciable benefits from development on the reservation. These factors include incompetently bargained coal leases and the inability of Navajos to participate in development due to low skills, low education, and a cultural distaste for this type of work. Finally, Hackenberg (1972) reports that the Papagos are willing to accept employment in the non-Indian world, but the employment available to them is mainly farm work or other unskilled jobs.

Even if Native Americans were able to participate fully in the economy and became more absorbed into non-Indian society, there is a suggestion of hidden costs in this ostensible benefit. Hackenberg and Gallagher (1972) argue that a cost of cultural change is an increasingly stressful life. They also contend that cultural change itself is stress producing. To substantiate their argument, they present data which show much greater rates of accident injury (which they interpret as a proxy measure for stress) among Native Americans living in modern environments than among those living in traditionally oriented communities.

8.1.3 Research Needs Related to Off-Reservation Indians

The research agenda which can be drawn from these studies must focus on off-reservation Indians in order to be relevant to the BLM Social Effects Project. The currently available literature focuses almost exclusively on reservation residents. The first thing that needs to be determined is the number and location of Native Americans presently dwelling away from the reservation in energy development areas. There are likely not many. The second research priority would be to determine how much growth can be expected in the number of off-reservation Indians under conditions of development and nondevelopment. If growth is expected to occur, it will be vital to determine where the newcomers are coming from, why they decided to move to the particular area, why they decided to leave their former residence, and how long they intend to stay. In other words, attention needs to be given to the factors affecting Indian in-migration to an area. As indicated above, this may be related to factors on the reservation which affect out-migration.

After these issues have been addressed, the direct effect of energy development on Native Americans can be assessed. Like other economic refugees, Native Americans may be subject to cultural conflicts as well as the stress of migration and resettlement -- in the case of those who have moved to take advantage of development. However, it remains an issue whether such a move is justified. That is, are Native Americans -- in-migrants or existing residents -- likely to enjoy whatever benefits accrue from the development of energy resources? Besides the benefits of development, attention also needs to be given to the costs.

Cultural conflicts may be a source of stress not present in the non-Indian population. As a research issue, the issue of stress and stress disorders should focus not only on the sources of stress but also on how stress and conflicts are resolved through the processes of social organization. Native American culture and Indian-Anglo cultural conflicts may be a source of tension, but the Indian culture provides members with adaptive strategies for conflict resolution. In a consideration of cultural conflicts, these adaptive strategies should not be ignored since they have a decisive role, positively and negatively, in determining the outcomes of conflicts. One positive and integrative adaptive strategy for coping with stress might be frequent contact with other Native Americans, especially friends or relatives from the reservation. The absence of such contacts might provoke a negative coping mechanism such as alcoholism or suicide. It is important to address the organizational aspects affecting and being affected by energy development on the number and characteristics of off-reservation Indians.

8.2 An Overview of Major Findings Concerning Women in Boom Towns

The number of articles and studies addressing the topic of women in energy boom towns is increasing rapidly. However, relatively few of these studies have dealt with the question in much more than a descriptive sense. Many are without new data and simply rely on observations made in one or two early studies or on impressions made during short visits to rapid growth communities. This points out a general failure in the work done to data to deal adequately with the distribution of effects during conditions of change.

The literature reviewed, however, indicates that the social effects of energy development upon women are often different than the effects on men, and that these differences have gone largely unrecognized. Changing roles and lifestyles and economic difficulties are suggested as major causes of stress for women in development situations. It is suggested that women in energy development areas may experience increases in economic responsibility (the increasing cost of living may necessitate a second wage earner in the household). As discussed in Section 6, however, traditional family obligations seldom diminish, clashes of values and family roles may occur, and stress situations may develop.

Data collected from various social service agencies in the community of Craig, Colorado indicate that during the period of Craig's rapid growth, the number of males seeking treatment increased only slightly, while the number of females increased dramatically. This set of findings has been cited several times in papers dealing with negative impacts of energy development on women. However, it must be viewed with a good deal of caution because of severe limitations of the data base. Data were collected at only two points in time, the sample is extremely small, and it appears there was double counting of cases using the services of more than one service agency.

Caution must also be exercised in interpreting these results because data collected by Freudenberg from the same community contradict earlier conclusions. Using a different set of dependent variables (e.g., measures of alienation and socio-psychological stress), Freudenberg found that women were coping with problems associated with rapid growth at least as well and in some instances better than men.

Recognizing these important contradictions, methodological problems and the need for additional research to increase understanding of how rapid growth affects women, some major findings can still be summarized as follows:

1) Woman are unlikely to benefit greatly from direct project employment. The rate of employment of women (as well as minorities) in the energy industry in the West is very low. Typically, the percentage of white males in the various fields of energy development, processing, and distribution runs from 75 to as high as 95 percent. There are several reasons for this. Few women belong to the mining and construction unions, and apprenticeship and equal employment opportunity programs have been very slow to change this situation. In addition, increased participation in mining or construction would require women to work in very non-traditional occupations. Finally, general attitudes of both men and women in the rural communities of the West appear to be opposed to this change.

2) Because few women receive high paying jobs in mining and construction, the argument that the benefits of increased employment more than compensate for the problem of higher prices may be true in aggregate economic terms, but is not true when applied to specific groups. In other words, costs and benefits often accrue to different groups. The creation of new job opportunities in mining and construction is likely to do little to alleviate the economic problems of women (or of Native Americans, the elderly, or other special groups) as the rules of training an employment are currently applied.

3) The literature reviewed on Third World development identified characteristics of social organization and change during development that were very promising for women. One article points out that, during the last quarter century, "development" has been viewed as the panacea for the economic ills of all less developed countries. The argument has been that if a modern infrastructure is created, the economy will take off, providing a better life for everyone. Yet evidence indicates that in virtually all countries and among all classes, women

have lost ground relative to men. By widening the gap between incomes of women and men, development has not helped improve women's lives, at least in a relative sense. Boulding's (1976) comprehensive review of historical development stresses that change in social organization and use of physical space in a community can have the reaching and differential effects on different groups, particularly women.

4) The inflationary impacts of rapid growth are said to be forcing many married women into the labor force because one income becomes insufficient to support a family. (However, lack of adequate control of national trends requires that caution be used in interpreting these results.) As noted above, the ability of women to compete for lucrative jobs in the mining and construction industries are limited with the result that women are forced into competition with each for low paying, low status, low opportunity jobs. There is some evidence that women who migrate into an energy growth community may more openly compete for employment in mining and construction than indigenous female residents, but even so, the number of women in these jobs remains low. In addition, because of the available pool of female labor, local businesses are not forced to raise the pay scale in such typical female jobs as waitress, clerk, etc., even though the energy development may have caused expansion in the number of jobs of this type.

5) Female heads of households, in particular, seem to be hard hit by rapid growth. Because of rising local costs, their expenses go up, but their income is often little affected. These women are often at a disadvantage in applying for higher paying jobs because these jobs often demand long hours or shift work, and female heads of households with dependent children find it very difficult to take such jobs. (Women with family responsibilities of any kind may be adversely affected in employment opportunity by prevalence of long hours and shift work.)

6) There is some indication that important value differences exist between newcomer and oldtimer women in energy boom towns. For example, the latter group may tend to be more traditional in their role preferences and lifestyles. In addition, because of their experiences in other communities, newcomers may demand different types of services such as day care centers and public transportation that have not been available in the past. These value differences may contribute to problems of integration and cooperation that are often ascribed to boom town areas.

From the review of literature on women in energy towns, the following are search questions that require further examination:

1) Do women benefit most when there is a labor scarcity during rapid growth and least when there is a labor surplus? (This might apply, as well, to other groups in impacted communities.)

2) Does rapid development lead to an increased polarization of the social stratification system with the weaker competitors (women, children, the elderly, and minorities) losing in terms of relative position and status to the stronger competitors (majority males)?

3) Do women, as a group, have different perceptions about the relative benefits and costs of energy development than do men? Is this difference consistent in pre-development and post-development evaluations? What are the reasons?

4) Which women enter the labor force in energy development towns? Is employment outside the home an opportunity or a cost to them?

5) What particular characteristics of the economic structure of energy developing towns create obstacles for women in employment, family relations, community organizations (e.g., long work hours, shift work, unionization, etc.)? Which create opportunities and for which women?

6) What effects does energy development have on women in terms of personal and family relations (mental health, spouse abuse, child abuse)?

7) Are the differences in effects of energy development on women great enough -- in both quantitative and qualitative terms -- from the effects on men that separate analysis is necessary?

8.3 An Overview of Findings Concerning Other Special Groups

While a majority of the work reviewed focuses on either women or Native Americans, a number of other special groups that may experience differential effects from energy development projects have been identified. Of these, those which have received the most attention are newcomers, oldtimers, children/adolescents, and the elderly.

Several studies suggest that there are some important differences between newcomers and oldtimers in energy development communities. Many of these differences are demographic or linked to demographic characteristics. For example, the newcomers may be younger, may have a greater tendency to be single, are more likely to be male rather than female, and so on. However, other differences are found in lifestyles, patterns and preferences for recreation and leisure time activities, attitudes, and so on. While these differences have been noted, there have been few attempts to assess or understand their consequences. Several studies suggest that there is a discrepancy between the expectations for wages, services, and facilities of newcomers and oldtimers. Little has been done, however, to document these differences or to analyze their meaning in terms of social effects.

The specific consequences and considerations of development for children and adolescents have been addressed in Section 6 and will not be reiterated here. Potentially one of the most disadvantaged groups in an energy development area is the elderly. They are thought to suffer the costs of energy development without recourse and without compensating benefits because they are no longer active members of the work force. While this argument has intuitive appeal, no significant data have been presented to substantiate it.

The literature on other special groups or populations is sparse. For example, there is little relevant work on other ethnic minorities such as Chicanos and blacks. Subsequent research should focus on the effects of energy development on a variety of special populations. More work is needed on the differential social effects of energy development upon newcomers and oldtimers and on the special problems that are likely to be experienced by children, women, and the elderly.

Stress is frequently identified as a variable of importance in analyzing the differential impacts on specific groups such as Native Americans, women, adolescents/children, and the elderly. Consequently, some of the literature on stress was reviewed as part of the effort to better understand the particular consequences of energy development on these groups.

The literature on stress can be divided into two categories according to whether the focus is on stress as a dependent or independent variable. There is a considerable body of literature in which stress is treated as a dependent variable, and the focus of research and analysis is on the definition of stress itself -- what it is, how and why it occurs, and how it can be measured. A principal thrust of much of this literature is the clarification of a model of the stress mechanism. Literature in this area is sobering as it readily shows the lack of agreement in the definition of stress and the extraordinarily complex analysis required to approach an adequate measure of the "stress" caused to an individual by a particular stimulus. Contextual, temporal, physiological, and psychological variables have been shown to intervene between the "stressor," the manifestation of "stress," and the behavioral response. Efforts to develop a conceptually satisfying and empirically reliable measure of stress point to the need for caution in utilizing and interpreting stress "indicators" as independent variables. Differences in the definition of stress also emerge as an area of confusion. Some researchers define stress as negative and detrimental -- the condition producing a non-adaptive response. Others, usually those more concerned with the mechanism of stress, assert that stress is a stimulus situation which can cause either adaptive (and beneficial) or maladaptive (detrimental) responses. A number of articles dealing with the consequences of energy development utilize this concept of "life-events" as indicators of stress on individuals or groups. Little was found that explicitly related increased stress to changes in social organization, especially stratification and diffusion.

The other focus of the literature on stress is examination of the consequences of stress. In most of this work stress is treated as an independent variable, although in some there is also an effort to examine the source of the stress as well as its ramifications. Many of the studies on women and family in energy development affected communities include some discussion of stress, but few, except those with a particular research focus on stress itself, appear to have dealt adequately with the problems of measurement and interpretation. This may be an area of fruitful focus for the BLM Social Effects Project.

REVIEWS

Albrecht, Stan L.
    1980   Unique effects of rapid economic growth upon different cultural groups: the Native American experience. Seminar on Coping With Rapid Growth, Scottsdale, Arizona.

Summary: Large-scale energy development in the West will have significant impacts on a number of distinct cultural groups such as the Native Americans, Mexican Americans in the Southwest, and rural Mormons. This paper begins with a discussion of some of the traditional cultural values of these different groups (for example, at least to some extent all three groups have developed lifestyles based on traditional agricultural pursuits), and then identifies how extensive energy development and population growth will affect these lifestyles. It is emphasized that both population growth and population diversification will have serious consequences for the different cultural and ethnic groups of the area.

After this general overview, the remainder of the paper focuses on the Native American experience. The magnitude of energy resources, as well as other important mineral resources on Indian lands is discussed. It is emphasized that the importance of the role that will be played by the American Indian in greatly expanded energy development can perhaps best be seen in the area of water rights--the lifeblood of the arid West. Several important legal cases are discussed, including Pyramid Lake Indians vs. Morton and Winters vs. the United States (the case from which the famous Winters Doctrine emerged). The negative experiences that some tribes have had with leasing tribal lands to energy development companies are discussed as are some of the important cultural and value implications of large-scale development on Indian lands. Concerning the latter, some primary data are presented from the Uintah Ute Indians which assess the compatibility of alternative development scenarios with traditional Ute goals and values. While 95 percent of the Utes view the further development of agricultural enterprises as being consistent with important tribal goals and values, only slightly over half feel that energy resource leases and tribal water leases are consistent with such goals and values.

Theoretical Framework: No theoretical model is evident in the paper.

Methods: The paper draws primarily from secondary sources, though some primary data are presented from a study by the author on the Uintah-Ouray reservation which seeks to determine the compatibility of alternative development futures with past traditions and future goals of the Ute tribe.

Data: Data from this project are available from the author. Approximately 100 interviews were completed with a random sample of Utes living on the Uintah-Ouray reservation. The contrast between a future characterized by large-scale energy development and the future that many Utes would define as more consistent with both past traditions and future goals is an interesting one.

Commentary: This paper concludes with a preliminary agenda for future research on energy development and Native Americans. The argument is made that the Indian tribes cannot really escape the reality of energy development, even if they choose not to develop their own resources. For example, the Northern Cheyenne cannot remain unscathed -- Colstrip, Montana with its massive power generation facilities and its strip-mining operations is only a few miles to the north. The author argues that relatively little is known about the consequences of various modes of energy development for Indian society. Would labor intensive projects solve some of the negative impacts of current capital intensive projects? It is suggested that three categories of variables must be considered: those dealing with individuals and groups of individuals, those relating to local institutions, and those reflecting attributes of the community as a whole. Socio-demographic variables are easily measured and often studied. However, the more consequential changes may be in people's values, their institutional patterns, or the solidarity and autonomy of their communities.

Baden, John; Stroup, Richard; and Thurman, W.
1980 Myths, Admonitions, and Rationality: the American Indian as a Resource Manager. Bozeman, Montana: Center for Political Economy and Natural Resources, Montana State University.

Summary: Native American cultures have often been held up as a model that could be followed in developing a more environmentally conscious and a less environmentally destructive world. Native Americans are believed to have been non-materialistic and not guilty of conspicuous consumption, since consumption was geared to what was needed and limited resources were used wisely and without waste. Environment-relevant behavior, it is usually assumed, was guided by very important cultural traditions that included a high level of ecological understanding.

Baden and his colleagues, however, argue that the image of the ecologically conscious, non-materialistic Indian culture may be more myth than reality. Their central argument is that cultural models may not be particularly relevant in understanding environment-relevant behaviors. Instead, they propose that economic models can more appropriately describe the behavior of early Native Americans just as they describe the behavior of other groups. Using such economic concepts as the law of demand (which states that the more a person has to give up to obtain a good, the less that good is demanded), and the principle of diminishing marginal utility (which states that the more of a good a person has, the less he will give up for an additional unit of that good), the authors then set out to describe the behaviors of a number of different Indian groups at different historical periods. Their conclusion is that the Indian tribes studied behaved toward the environment just as economic theory suggests they would. For example, when goods were plentiful and cheap they were squandered rather than conserved. While the Plains Indians did, indeed, utilize the buffalo to the fullest extent imaginable when the buffalo was scarce (i.e., before they had the "technology" of horses and guns), when they became plentiful, there was a great deal of waste. That is, as the "price" of buffalo fell, the patterns of utilization changed dramatically. During this period, buffalo were often killed by the Indian merely for the tongue and the two strips of back strap. The authors conclude that the relative harmony that existed between the Native American and nature appears to be caused not by an ecologically superior culture but rather by a relatively small and dispersed population and by a technology of only modest potency.

Theoretical Framework: This study is clearly guided by an economic theory of human behavior. The specific contrast which the authors make between cultural values theories and economic theory is particularly interesting. Their conclusion is that individuals do respond to relative costs and benefits and that such economic principles explain environmental behavior quite adequately.

Methods: No primary data are collected. The authors rely on historical and ethnographic documents describing Native American cultures.

Data: No primary data are presented.

Commentary: This article is important for at least two major reasons. First, using a wide-ranging set of ethnographic data, it contradicts much of what has previously been written in the environmental literature regarding the importance of adopting the behavior patterns of more primitive peoples if greater environmental concern and consciousness are to be attained. Second, the authors clearly opt for an economic model of human behavior. Their thesis is that behavior is determined primarily by market factors and that no matter how interesting culture and value systems may be, they are far less important in understanding environmentally-relevant behaviors than several basic assumptions and predictions of economic theory.

Boggs, James P.
1978 Relationships between Indian tribes, science and government in preparing environmental impact statements. Northern Cheyenne Research Project Paper Series. Lame Deer, Montana.

Summary: This paper is important because it describes the failure of environmental impact statements (EIS) as proposed under NEPA, to meet the needs of Indian tribes. It provides an extended example of how EIS are inappropriate and consequently doomed to failure for major policy roles on reservations. Reservations are unique in numerous respects. They are somewhat independent political and economic entities, yet remain vulnerable to regional social change and to decisions arrived at in other locations. They are culturally distinct from each other as well as from the larger society, hence generalizations are not always universal or applicable to any particular reservation. However, the law attempts to make EIS information universal, applicable, and legally binding even in conditions where it is inappropriate.

Theoretical Framework: Boggs proposes a special variety of EIS on reservations which is tailored to the unique meanings of the tribe. The interpretations tribal members have of land, resources, and way of life must be taken into account on their own grounds not from formalized definitions provided by other interpretive sytsems. Moreover, the effects of off-reservation development upon tribes must be provided in the EIS, since the long-term impacts of adjacent development may be potentially devastating to tribes. Boggs calls for a close coordination of scientific and legal analyses. Scientific information is often ignored in courts, causing negative consequences to the study locations. Such disciplinary conflicts are inexcusable and arbitrary except from a bureaucratic perspective, which seeks easy and convenient legal solutions rather than more complex and difficult social and cultural ones.

Methods: The data provided are personal and observational based upon an extended participation with the Northern Cheyenne Research Project.

Data: The data are case study excerpts for the most part. They generally relate to the often irrational interfaces among human needs of the studied tribe, scientific information, legal actions, and policy decisions.

Commentary: This paper is extremely relevant because it approaches the problem of impacts upon reservations due to on-reservation and off-reservation decisions and development. It also points to flaws in the EPA approach to reservations specifically, and communities more broadly.

Hackenberg, Robert A., and Wilson, C. Roderick
1972 Reluctant emigrants: the role of migration in Papago Indian adaptation. Human Organization 32:171-186.

Summary: This article is one among several others dealing with the Papago response to social and cultural change that appeared in a special issue of Human Organization. Drawing on survey data, the authors seek to establish whether Papago mobility was temporary and circular within the reservation community or was permanent and directed as out-migration from the reservation. To summarize their numerous findings, village emigration occurs with a likelihood of about .50 while reservation emigration is substantially less (about .30). Females are more mobile than males, and urban places are more desirable destinations than rural areas. By age, the trend is for increasingly younger ages to be the most likely to be migrants. The main motive for mobility is economic, and prolonged emigration also decreases the likelihood of return to the reservation. Despite prolonged periods of off-reservation residence, tribal members return frequently to visit with friends and family. The authors conclude with, "The hypothesis that the Papago Indians have been engaging in traditional migratory behavior within a modern setting must be rejected."

Theoretical Framework: Although there is not much of a theoretical framework in this article the categorization of migratory behavior appears useful. It is: (1) sedentary, which is approximate to residential migration; (2) circulatory, in which an individual is away from his/her home village for more than a year but returned; (3) oscillatory, where several circular moves are made; and (4) linear, permanent movement from the reservation.

Methods: The methodology seems among the most reasonable in the entire series of papers.

Data: The article contains very little assessment of data quality. The N of the sample was small (747) for this type of research. The Papago population is about 19,000. The data are probably available from Hackenberg.

Commentary: The typology outlined in "Theoretical Framework" above is very useful and would be helpful in assessing the types of migration behaviors that exist among Indians living off the reservation. Whether the off-reservation Indian population is linear or oscillatory would seem to have substantial bearing on social impact assessments. Hackenberg's other article, "Restricted Interdependence," seems to contradict his conclusions concerning migration as a product of traditionalism.

Hackenberg, Robert A.
1976 Colorado River Basin development and its potential impact on tribal life. Human Organization 35:303-311.

Summary: The Colorado River Basin is the geographic home of more than one-fourth of all Indian people in the United States. Therefore, the development of energy resources within the Basin has important implications for the Native American population. However, Hackenberg argues that Native Americans have failed to derive permanent benefits from previous development activities because government and industry have generally ignored two basic propositions: (1) Social change which defines the goals and circumstances of Indian economic life takes place more rapidly than the goals of technological intervention can be achieved. The objectives of resource development programs have become obsolete in less time than it took for construction to be completed. (2) Massive technological intervention cannot repeal underlying ecological and economic processes. The Southwest is a marginal area. Its agriculture is precariously balanced on shifting soil and moisture conditions, and many of its mineral and energy resources are low grade. It is particularly vulnerable to internal climatic change and to external fluctuations in world markets and prices.

Hackenberg is particularly concerned that future energy development will have little more benefit for the Indians than have past water agricultural projects. More particularly, highly technical, capital-intensive, corporate enterprises with low labor requirements will exploit the resources and will create substantial amounts of wealth. However, few of the benefits are likely to go to the individual Native Americans who are most in need. This does not deny that tribal corporations will benefit. However, tribal corporations which are the counterparts of external corporate enterprises, rather than individual Indians, will be the beneficiaries.

Hackenberg makes one additional point that has important relevance for the assessment of impacts of energy development on the reservations as well as on rural communities more generally. He notes that because of the concentration of highly paid administrative officials and technicians, including large numbers of educators and medical personnel that are found in agency towns on the reservation, the asymetry of income distribution has led to a two-class system. Administrators, technicians, and office workers (both Indian and white) form the elite; far below them are laborers, service workers, and welfare recipients.

Theoretical Framework: Hackenberg presents no explicit theoretical model. He is an anthropologist by training and makes direct reference several times to the parallels between what has happened on Indian reservations and what has happened with rural populations in Third World and developing areas.

Methods: This piece is based primarily on the experience the author has had in the field working with Indian tribes in the Colorado River Basin. Many of his illustrations are taken from direct experience with development efforts with the Papago and Pima Indians. Research methods were primarily ethnographic.

Data: Few data are presented; instead, conclusions are based on ethnographic work of the author.

Commentary: Of particular relevance is the observation that massive technological intervention cannot repeal underlying ecological, economic, and cultural processes. The impacts of energy development in the West will be affected by these processes when dealing with geographically isolated rural and minority populations.

Robbins, Lynn A.
Native American experiences with energy developments. Unpublished paper, Bellingham: Western Washington University.

Summary: This paper presents a number of important examples of Native American experiences with major energy developments in recent years. Robbins emphasizes the unique relationship that Native Americans have with the United States government. Unlike most other citizens of the country, Native Americans are in trust status which legally compels the United States government to provide for their welfare, including education, health, land management, and resource development.

The history of the trust obligation in the development of Indian energy resources has not been a positive one. Instead, it has been characterized by serious omissions, neglect, corporate plundering, and political machinations. In fact, until the 1970s, Native American energy resources were easy pickings for corporate interests; the federal government often worked hand-in-hand with energy corporations to open Indian lands for massive use at absurdly low costs and with few jobs for local people. Generally, Native American lands were treated as if they were federal lands, despite the fact that Native Americans were in a trust relationship with the United States and were rightful owners of those resources. In many cases, Indian resources were sold at fixed prices contracted over long periods of time or for as long as the mines produced economically.

Robbins acknowledges that recently things have taken a turn for the better. This change has occurred, in part, because of the growing dissatisfaction with the types of arrangements that had been negotiated in the past. For example, studies conducted with tribes like the Navajo, revealed considerable displeasure toward both existing and proposed projects. In many instances it became increasingly evident that tribal members did not believe that economic benefits outweighed environmental risks and, most importantly, the disruption caused to local community solidarity, grazing lands, and the unwanted influx of non-Indians. The author goes on to detail other important changes that are affecting Indian response to energy development proposals. Among these are the establishment of research offices by tribes such as the Navajo, Northern Cheyenne, Crow, and Colville Confederated. These offices inform the tribal Council of proposed energy developments and their potential benefits and costs for the tribe. They also conduct surveys of tribal members and have provided extensive information to members regarding the potential impacts of a proposed project. Such efforts have led to more informed decisions by tribal Councils and to increased public input on those decisions. The creation of CERT has also promoted information sharing among tribes and has led to the correction of serious inequities in some existing tribal contracts.

Theoretical Framework: No theoretical framework is developed in the paper.

Methods: No primary data were collected specifically for this paper. The author summarizes some previous research efforts including surveys conducted by the Crow, Northern Cheyenne, and Navajo research offices.

Data: Summary data discussed in the paper could be useful in developing an overview of Native American attitudes toward energy development.

Commentary: This paper emphasizes that the "rules of the game" in the exploitation of energy resources on tribal lands are changing. The tribes are much more informed, and many of them are developing or contracting the expertise to enter into negotiations with energy companies without interference of federal agencies such as the BIA. In the future, Indian tribes will control the decisions about how the resources located on their lands are to be developed and, perhaps even more importantly, if they are even to be developed at all.

9. MITIGATION OF THE EFFECTS OF ENERGY DEVELOPMENT

Available literature on mitigation of socioeconomic impacts consists primarily of "case studies" of specific energy development projects, concentrating almost entirely on the activities and effects put forth by the industries involved. This appears to be a function of: (1) the exclusion of mitigation as part of the SIA process, and (2) the fact that mitigation efforts have occurred primarily because of government mandates (usually state and/or local).

In general, the attempts to mitigate the adverse effects of energy development at the community level represent a significant change in the distribution of costs and benefits accruing from this development. In the past, economic development activity within an area was perceived almost exclusively as a benefit with little acknowledgement of the social costs incurred by the community and its citizens. Although most of the case studies represented in the literature do not approach the issue of mitigation from any theoretical perspective, for the purposes of the BLM Social Effects study the question of equity of costs and benefits implied in mitigation efforts can be explored. Primarily because of government regulatory mandates, industry undertaking energy development activities have, through mitigation, begun to internalize many of the social costs previously assumed by the public sector.

The actual mitigation efforts can be classified into four general categories: (1) monetary grants to be used by government jurisdictions to meet the fiscal requirements of providing services and/or facilities, (2) development and management of services and facilities by the industry, (3) sharing and/or provision of specialized expertise by industry, and (4) guarantees of payment using industry authority and backing. Within the first category, a broad range of services and facilities has been subsidized by industry grants, including water and sewer, roads and streets, and medical facilities. Development and management of services and facilities (category 2) have generally taken the form of construction and management of housing facilities; however, a number of "new communities" developed by industry can also be included. Specialized expertise has been provided by industry through use of their existing staff, as well as the actual hiring of specialists needed to manage a specific mitigation activity. Industry has frequently guaranteed the repayment of state and/or federal loans obtained by communities to construct public facilities.

The mitigation process itself has been carried out with varying degrees of sophistication and has not always been tied to other components of social impact assessment. In fact, there appears to be some question, confusion, and disagreement as to the appropriateness of including mitigation activities in the SIA process. Where it is perceived as a part of the SIA process, it is tied closely to an impact monitoring system which allows for adjustment in mitigation efforts. Under these conditions, mitigation is the result of a community (or area) analysis of current conditions (baseline) and assessments of needs and demands resulting from the energy development in the area. Used in this manner, mitigation provides a "measure" of the accuracy of the results obtained in other SIA process steps. Although very little has been done in the past in this regard, the available mitigation data would provide a source for evaluation of SIA for the BLM Social Effects study. For example, when included as a part of the SIA process, mitigation strategies are developed to alleviate "identified negative impacts" with the intention of minimizing various sources of social disruption, and causing industry to internalize social costs previously assumed by the communities. The implication is that those who are perceived to benefit most (energy consumers and energy industry) should pay more of the "social cost," thus equalizing the costs and benefits accruing to the impacted communities and their citizens.

The extent to which mitigation strategies actually achieve this goal is unknown, primarily because the benefactors of mitigation efforts have not been accurately identified. For example, who actually lives in housing constructed as part of a mitigation effort? Would community disruption occur without industry constructed housing, or is this type of mitigation actually reducing benefits (via preventing housing production by local contractors) which could and/or should accrue to the community? Research conducted for the BLM Social Effects Project should be designed to provide answers to questions of this nature. It is likely that the cost-benefit aspects of mitigation are variable, and that the presence of certain combinations of social conditions require different mitigation responses.

Mitigation efforts have not usually been identified or proposed as part of social impact assessment, but rather have resulted from industry's desire to accomplish objectives (energy development) expediently and economically. In some cases, this has resulted in increasing social costs to communities. For example, a "new community," was constructed which was dependent for years on a community service center (schools, fire, and police protection, etc.) located fifty miles away. This increased the demand and cost to that service center. To cite another example, an energy development company provided housing for its employees by long-term lease of existing units. This severely restricted an already tight housing supply in the community. Clearly, these types of mitigation strategies do not equalize costs and benefits of energy development, but in fact represent a dissociation of costs from benefits.

The method of developing mitigation strategies has also varied considerably, especially with regard to the extent and type of community participation. A few mitigation efforts have been conducted with industry actively promoting broad-based citizen participation. Some industries have elected to work with elected officials only; and some, particularly in the cases where "new communities" were developed, seem to actively discourage citizen participation.

One area not addressed in the literature is that of the mitigation efforts undertaken by the impacted communities (elected officials and citizens). The BLM Social Effects study should attempt to provide some insight into community response relative to mitigation of energy related impacts. Although literally dozens of "how-to" manuals, workshops, and seminars for local officials and community groups have been conducted, virtually no information is available detailing actual community responses in the development of mitigation efforts, an ideal demonstration of existing community political and social organization. The BLM Social Effects study should seek to identify preconditions which do (or can) lead to specific effective mitigation responses. The above-mentioned "how-to" approaches usually begin by recommending that a planner be hired immediately. However, certain conditions can exist which would negate the value of this advice. For example, the community might already have stringent land use and development codes and ordinances, or the citizens in the area might hold extremely negative attitudes towards "planning" and "planners," or the financial resources needed to hire qualified personnel might not be available. The point, of course, is that a standard community response to mitigation does not, and probably should not, exist. Rather, different types of communities and community conditions require variable mitigation responses; research should be designed to determine what they are.

Finally, one aspect of mitigation has been almost entirely ignored, both by so-called practitioners and by those analyzing the results of their efforts. In its generally accepted definition, "mitigation" means the minimizing of negative impacts and the maximizing of positive impacts. However, no mitigation strategy presented in the literature includes any attention to maximization of positive impacts. It is implied that alleviation of negative impacts must maximize the positive; however, as discussed previously, benefits and costs need to be addressed separately, as they often represent different processes. It is probably safe to say that the only positive impacts ever identified have been economic (e.g., increased assessed valuation of increased employment opportunities). The BLM Social Effects study, therefore, should be sure to identify positive impacts other than economic, and suggest ways of maximizing positive impacts, as well as addressing the means to minimize the negative effects.

REVIEWS

Metz, William C.
Socioeconomic Impact Management in the Western Energy Industry,

Summary: The author reviews and compares various industry mitigation efforts in the western states and asserts that there are eight impact management actions: (1) construction of a whole community, (2) dramatic alteration of an existing community, (3) subdivision development, (4) temporary construction phase housing, (5) housing financing, (6) community services being upgraded, (7) community planning, and (8) industry-community communication.

Examples of industry involvement in each of the above actions are described. However, the author provides no evaluation of the outcomes of mitigation efforts, nor is there any discussion of how or why industry used specific mitigation strategies. He concludes the article with several unsubstantiated statements. For example, "all company actions (presumably mitigation) produce indirect returns on the investments through worker productivity and project efficiency."

Theoretical Framework: No theoretical framework is used.

Methods: The article is a description of industry actions taken.

Data: Data are probably accurate.

Commentary: The article's value lies in its provision of a reasonable, comprehensive (for its time) shopping list of what industry has attempted to do relative to mitigation.

Peelle, Elizabeth

1979 Mitigating Community Impacts of Energy Development: Some Examples for Coal and Nuclear Generating Plants in the United States.

Summary: The paper compares the social impact mitigation efforts of TVA, Missouri Basin Power Project (MBPP), and Puget Sound Power and Light. Factors compared include origins, goals, scope, local participation, financing and costs, adequacy, and significance. In each case, mitigation efforts originated as a result of governmental (local, state, and federal) regulation. Goals of the mitigation strategies are a reflection of the regulation which precipitated their existence. Each mitigation plan varies in scope, with MBPP covering a broader range of socioeconomic conditions; all three plans include a monitoring effort. All three mitigation efforts include local participation, and the participants have considerable input into implementation of mitigation strategies. MBPP's strategy contains the most elaborate financing techniques, including grants and loan guarantees. The adequacy of the plans is not assessed, as this is a time-dependent criteria. The author concludes that these efforts are significant because they represent the first effort in this area.

The author asserts that, although goals may be similar, mechanisms for achieving these goals vary and should be encouraged to vary as necessary to meet site-specific needs.

Theoretical Framework: No theoretical framework is used.

Methods: The methodology used is comparative description.

Data: Data are presented in case studies.

Commentary: The comparisons of the three mitigation strategies are more in-depth than most. The author attempts to provide some analysis along with factual comparison. It is useful for the questions it raises as well as for the answers it provides.

Thompson, James G.
1978 Progress in the state of the art of social impact assessment in the northern Great Plains. Prepared for the 1978 Meetings of the American Association for the Advancement of Science.

Summary: The author reviews several major problems confronting social impact assessment: (1) the lack of theoretical sophistication, (2) the indeterminancy of much social behavior, (3) the expense of preparing SIA's, (4) too little time and too few resources allocated to the efforts, (5) the ethical problem of social scientists selling their services to the highest bidder, and (6) social scientists making SIA's useful for immediate practical planning purposes while at the same time developing scientific understanding of the process.

The author reviews several SIA models and presents a model developed through his own experience in the field. Early community participation is a crucial element in this model, and it has been expanded to include monitoring and mitigation. This is a critical step if SIA's are ever to be conducted so that scientific understanding of the process is achieved.

Theoretical Framework: As this is an assessment of the state of the art of SIA, no theoretical framework is used.

Commentary: This paper critiques some of the problems of the SIA process; these problems, and others must be addressed if the Social Effects Project is to be successful. The model presented has potential as a conceptual framework, which, combined with an appropriate theoretical framework, can provide guidance in designing research to further the state of the art of SIA.

Waidman, Arthur L.
1979 The role of the church. In Judith A. Davenport, and Joseph Davenport, III, eds., Boom Towns and Human Services. Laramie: University of Wyoming Press, pp. 101-114.

Summary: This article is an effort to define a role for the church in boom towns, especially those energy development communities found in Wyoming and the other western coal producing states. The article suggests that the church has an important role to play in providing protective services, such as assisting people in dealing with boom town change, and values clarificaiton.

The church has several forms of assistance for the purpose of performing the above roles. These include the diacouate, which is assisting people in distress; presence and participation in community affairs; dialogue to assure consideration of the human concerns in community actions; action ministry, which is the creation of organizations and institutions to deal with community problems.

The article then suggests formats for examining community problems and provides a procedure for analyzing community problems. Both of these formats could be viewed as a scheme for taking inventory and recording various aspects of a problem situation, such as the who, how, where, and why regarding community situations.

Finally, the article closes with a more specific set of suggestions for church activities in dealing with community problems: caregiving, education, conflict resolution, management training, providing space, generation of financial support, advocacy, bridging gaps between groups, and forming coordinating boards.

Theoretical Framework: There is no theoretical framework for the article.

Methods: This is not a research article, and the methodology for problem solving constitutes a procedure more for action than research.

Data: There are only limited data observations based on clinical experience. The article's descriptions of community problems are of little value.

Commentary: The article may be of some importance for developing an inventory of mechanisms used by churches to deal with community problems. It may also be of some interest to those preparing mitigation activities for boom town problems.

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Denver Federal Center
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P.O. Box 25047
Denver, CO 80225

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